

No. 13352

IN THE

United States Court of Appeals

FOR THE NINTH CIRCUIT

JULES D. GRATIOT and AIR-MAZE CORPORATION,

Appellants,

vs.

FARR COMPANY, a corporation,

Appellee.

BRIEF FOR APPELLEE.

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BRIEF FOR APPELLEE.

Statement of the Case.

This is an appeal from the decree entered by Judge Hall in the Southern District of California, Central Division, sustaining the validity of Letters Patent No. 2,286,479 to Farr on an "Air Filter Panel" and holding that appellants have infringed each of Claims 4, 5, 7 and 8 thereof.

Appellants are the Air-Maze Corporation and Jules D. Gratiot, a factory representative of Air-Maze Corporation. Appellant Air-Maze Corporation conducted the entire defense of the case, agreed to pay all the expenses of the suit, and to indemnify the defendant Jules D. Gratiot [R. 319-322]. The Farr Company was first formed in Los Angeles by the patentee, Morrill N. Farr, and his two sons, as a partnership, which later became the corporation known as Temperatair, Inc., name of which was later changed to the Farr Company.

The air filter panels of the type of the patent in suit are principally employed in air ventilating systems or in the intake systems to engines, such as diesel railroad engines or aircraft engines. Most of the sales of this type of air filter panel are to highly technically trained people, such as engineers or architects engaged in designing engines or ventilating systems [R. 258, 259].

The filter panels are intended to remove dust from air by contacting the air with collective surfaces which are oiled to cause the dust to adhere thereto. In use of such filters the adhering dust is retained in the air filter panel as a "dust load" until the air filter panels are removed, cleaned, re-oiled and again inserted in use. This type of air filter is known as an "impingement type" filter.

Two factors of primary importance in an impingement type filter are the efficiency of the filter in removing dust from air and the pressure drop through the filter. Both of these change as the filter panel becomes loaded with dust.

Previous to the invention of the Farr patent in suit all prior impingement type air filters either possessed a low filtering efficiency or a high pressure drop, or a pressure drop which rose rapidly when the filter became loaded with dust. The Farr patent in suit provided *for the first time* in the art a filter panel which combined a *high efficiency* in removing dust from air and at the same time provided a *low pressure drop* which did *not increase rapidly* with increased dust load. The Farr air filter is capable of filtering 50% more air than previous filtering panels and is economical in construction, maintenance and ease of cleaning.

The Farr patent discloses a filter utilizing corrugated wire screens. The corrugations have an angle therein and are set parallel to the direction of air flow through the filter. The corrugations provide a large number of small passages having an angle therein for the flow of air through the filter which passages are distinct from the openings in the mesh of the wire screen. The novel properties of the Farr filter are dependent, however, on the fact that the air is forced through the mesh of the screen until the mesh of the screen becomes loaded with dust. The passages which are separate from the mesh of the screen insure high efficiency while preventing the pressure drop rising rapidly with the dust load.

The Farr patent in suit has had a most unusual commercial success. The business was started by the inventor and his two sons in a small room with substantially no capital. They entered into competition with large and powerful corporations already entrenched in the field. Due solely to the intrinsic value of the filter panel of the patent in suit the business grew steadily until in the year 1951 the sales of the Farr filter panel were in excess of One Million Eight Hundred Thousand Dollars. The business has now expanded until it now occupies a large new manufacturing plant employing some one hundred fifty people and the Farr filter panels are sold throughout all of the States of the United States and many foreign countries [R. 303].

As early as 1942 the Air-Maze Corporation attempted to suppress the manufacture of the Farr filter panel by bringing action in the Southern District of California for alleged infringement of the Greene Patent No. 1,566,088 under which Air-Maze was then manufactur-

ing its Type A and Type B filter panels. The Air-Maze Type A and Type B filter panels are made of screen wire but the air is passed perpendicular to the planes of the screen rather than parallel as in the Farr panels, so that there exists no passages for the air except through the openings of the screens. This case resulted in a judgment in favor of Farr on the ground that the patent was not infringed [Pltf. Ex. 17; R. 957-974]. Air-Maze then found it necessary to meet the competition provided by the Farr air filter panel and to bring out a filter panel capable of providing high efficiency with low pressure drop which rises slowly with increased dust load. They first commenced the sale of an air filter panel referred to in the record as the "P-5 Obsolete." In 1948 they found it necessary, however, to commence the manufacture of the P-5 filter panels which are complained of herein [R. 327].

Appellants' P-5 filter panel is a substantial copy of the Farr patent in suit. Its construction, mode of operation and performance is substantially identical with that of the Farr filter panel. It possesses the unique characteristic of the Farr filter panel of providing high efficiency with low pressure drop and slow rise in pressure drop. It possesses the same low cost of manufacture, with low cost of maintenance and ease of cleaning. It differs from the Farr patent in suit principally in the use of corrugated screen wire having two angles in the corrugations rather than one, which difference is without substantial effect on the mode of operation or performance of the panel. It omits the use of flat screens but in so doing is not in fact departing in any respect from the Farr invention.

The original application for the Farr patent in suit [Ex. 1-B; R. 939] discloses filter panels omitting flat sheets and the proceedings in the Patent Office demonstrate that Farr always intended to include both filters containing flat screens and filters omitting the flat wire screens. The patent in suit contains two sets of claims, Claims 4, 5, 7 and 8 in suit not limited to the flat screen, and Claims 1, 2, 3 and 6 in express terms limited to the flat screen.

The trial court made Findings in accordance with Rule 52 of the Rules of Civil Procedure. These Findings are fully supported by the record and met and disposed specifically of every issue urged in Appellants' brief. They may be summarized as follows:

First, that the Farr patent in suit for the first time provided the art with a filter panel which combined the ability to provide high efficiency in removing dust from air with a low pressure drop which does not increase rapidly [Findings 5, 6, 8, 9, 10, 11, 12, 13 and 14].

Second, that the public has recognized the value of the air filter panels of the Farr patent in suit which has gone into commercial use at a steady, rapid and increasing rate and has been responsible for the development of an important business [Finding 7].

Third, that the Farr filter panel discloses a new combination of elements providing not only new benefits and advantages in the cleaning of air but in cost of manufacture, maintenance and upkeep, which combination is not disclosed in any prior art patents [Findings 10, 11, 12, 13 and 14].

Fourth, that for many years prior to the invention of the Farr patent in suit, the prior art air filters had

been made the subject of great effort and money in scientific study in testing without the Farr filter panel being suggested therefrom [Finding 14].

Fifth, that while Claims 1, 2, 3 and 6 of the Farr patent (which are not in suit) are expressly limited to the use of flat wire screen, Claims 4, 5, 7 and 8 (in suit) are not limited to the use of such flat wire screen and were not intended by the Patent Office to be so limited [Finding 21].

Sixth, that the P-5 air filter panels are essentially and basically the same as the air filter panels of the Farr patent in suit, possessing the same mode of operation and the same characteristic advantages [Findings 19 and 20].

Rule 52 of the Rules of Civil Procedure provides in part:

“Findings of fact shall not be set aside unless clearly erroneous and due regard shall be given to the opportunity of the trial court to judge of the credibility of the witnesses.”

The Supreme Court in its recent decisions has emphasized that a court of Appellate Review must not disturb such findings unless the same are clearly erroneous.

Graver Tank & Mfg. Co., Inc. v. Linde Air Products Co., 336 U. S. 271, 93 L. Ed. 672;

Graver Tank & Mfg. Co., Inc. v. Linde Air Products Co., 339 U. S. 605, 94 L. Ed. 1097;

Goodyear Tire & Rubber Co., Inc. v. Ray-O-Vac Company, 321 U. S. 275, 88 L. Ed. 721.

This Court has in its recent decisions followed the rule that the Findings of the trial court where supported by substantial evidence should not be disturbed.

“The Court, by its above mentioned findings, determined two questions—the question of novelty and the question of invention. Both were questions of fact. *Ralph N. Brodie Co. v. Hydraulic Press Mfg. Co.*, 9 Cir., 151 F. 2d 91; *Maulsby v. Conzevoy*, 9 Cir., 161 F. 2d 165. The findings are supported by substantial evidence, are not clearly erroneous and should not be disturbed.”

Refrigeration Engineering, Inc. v. York Corporation, 168 F. 2d 896, 899, C. C. A. 9.

See also:

Faulkner v. Gibbs, 170 F. 2d 34, 37, C. C. A. 9.

The Findings of Fact of the trial court herein are not only supported by substantial evidence but, indeed, the record does not contain any evidence which would sustain any contrary findings.

The principal issues raised by Appellants in their brief are:

First, Appellants' contention that the patent in suit does not disclose a patentable combination for the alleged reason that it produces no new, surprising or unexpected results. In making this contention Appellants rely primarily on the decision of the Supreme Court in *Great A & P Tea Co. v. Supermarket Equipment Corporation*, 340 U. S. 147, 95 L. Ed. 162, and the 1952 decision of this Circuit in *Himes v. Chadwick*, 95 U. S. P. Q. 59. In these cases the sole novelty asserted in the combination of the elements of the patent resided merely in a change in dimension or the number of parts resulting in no new or different function or no new result or

unusual or surprising consequences. As stated by this Court in the *Himes v. Chadwick* case:

“The test is whether the unification of the elements brought into the combination produces ‘unusual or surprising consequences.’ *A. & P. Tea Co. v. Supermarket, supra*; *Packwood v. Briggs & Stratton Corp., supra.*”

In the instant case the trial court has specifically found the new and surprising result called for by this test in its expressed findings that the filter panels of the patent in suit were the first to combine the high efficiency in removing dust from the air with a low pressure drop which does not rise rapidly. These findings are fully supported in the record and on this issue therefore the case is governed by the rule set forth in such decisions as

Williams Mfg. Co. v. United Shoe Machinery Corp., 316 U. S. 362, 86 L. Ed. 1537;

Bianchi, et al. v. Barili, 168 F. 2d 793, C. C. A. 9;

Page, et al. v. Myers, 155 F. 2d 57, C. C. A. 9.

These decisions set forth that where the trial court has found the patent in suit to produce results of unusual and surprising circumstances which are supported by substantial evidence and not clearly erroneous the findings that the patent in suit represents a new patentable combination should not be disturbed.

Second, Appellants assert that no invention would be involved in producing the Farr filter panel from the prior Detroit air filter panel. The Detroit filters are made of sheets of paper corrugated and arranged parallel to the flow of the air but the air passages have no mesh members so that it is impossible for the air to flow anywhere except down the passages. The record demonstrates

that the paper filters do not have either the mode of operation or the characteristic performance of the Farr filter panel. If built with similar pressure drop such filters are 7 to 10% less efficient in removing dust from air [R. 330].

The Detroit air filters have been on the market since 1932 whereas the old Air-Maze Type A or Type B filters made with screen wire have been sold for a longer period of time. It is Appellants' theory that the patent in suit should be held invalid on the ground that it allegedly required no invention to use wire screen in a Detroit air filter panel. The lower court reviewed the testimony in the record concerning the immense amount of scientific study given by skilled men to the design, testing and construction of filters. Although these skilled men had simultaneously tested and compared the Detroit paper filter and the Air-Maze Type B wire screen filter, the Court noted that these skilled men had received no suggestion therefrom of the invention of the patent in suit. The Court found that the Farr filter panel has a different mode of operation and new unexpected advantages over the Detroit air filter panel and concluded as a fact that the Farr filter panel represented an invention thereunder.

On this issue the case is clearly governed by such decisions as *Goodyear Tire & Rubber Company, Inc., et al. v. Ray-O-Vac Company*, 321 U. S. 275, 88 L. Ed. 721, and *Oliver-Sherwood Co., et al. v. Patterson-Ballagh Corporation*, 95 F. 2d 70, C. C. A. 9, which set forth the rule that where the patent in suit is shown to involve a new construction, new mode of operation and new and unexpected result a patentable invention may be

present and Findings of Fact on such issue by the lower court not clearly erroneous should not be disturbed.

Third, Appellants contend that the Farr patent in suit is invalid for lack of invention over prior patents to St. Cyr and Niestle (French). As found by the lower court the devices of these patents neither contain the combination of elements nor provide the mode of operation of the patent in suit. The St. Cyr patent is not even directed to an air filter panel and neither it nor the Niestle patent are capable of providing the characteristic advantages of the Farr patent in suit. There is no basis for setting aside the Findings of Fact of the lower court with respect to these patents.

Fourth, Appellants allege that the P-5 filter panels do not infringe Claims 4, 5, 7 and 8 in suit. This contention is made notwithstanding the fact that Appellants' P-5 filter panels are substantially a deliberate copy of the patent in suit. All of Appellants' contentions with regard to non-infringement are different variations of Appellants' insistence that, by the omission of flat wire screen, Appellants have avoided the patent in suit. The lower court found that Appellants' P-5 filter panel was basically identical with the patent in suit; that they were of substantially identical construction, mode of operation and performance. These Findings are fully supported by the evidence and not clearly erroneous and should not be disturbed. The fact that filters omitting flat screens were shown in the original Farr application and are not specifically shown in the patent in suit creates neither any abandonment nor estoppel. The rule is well settled that an inventor abandons none of the forms of his invention merely by substituting a continuation application showing only the best form of his

invention in place of his earlier application showing several forms.

Research and Development Corporation of Illinois v. Chase, et al., 88 F. 2d 353, 355, C. C. A. 7.

The record demonstrates that the P-5 filter panels are an unscrupulous copy of the Farr patent in suit with only unimportant and insubstantial changes which do not effect the mode of operation or performance of the panel. The marketing of this panel by Air-Maze Corporation is a most brazen attempt to pirate the invention of the patent in suit. The Supreme Court in its recent decision in *Graver Tank & Manufacturing Company, Inc. v. Linde Air Products Company*, 339 U. S. 605, 94 L. Ed. 1097, has expressly and most emphatically emphasized the rule that such an unscrupulous copyist should not be permitted to escape the charge of infringement by merely resorting to unimportant, insubstantial changes.

There is no merit to any of the contentions set forth in Appellants' brief. When analyzed they will all be found to be predicated on erroneous contentions of fact opposed not only to the Findings of Fact of the lower court but the overwhelming evidence in the record.

Statement of Facts.

The Farr Patent in Suit:

The Farr filter panel is described in the patent as formed of screen wire member 4 which is crimped or corrugated as illustrated in Figure 3. These crimps form roughly triangular shaped valleys which are referred to in the patent as air passages 5 leading through the filter panel. The crimps are at an angle to the face of the filter and in addition thereto, as indicated

at 6, these crimps change abruptly in direction. Thus the air flow through valley 5 must change direction not only as it enters the valley but again at the angle 6 of the crimps. The "air passages" of the filter panel of the patent in suit are formed and defined solely by the crimped or corrugated wire screen 4. Thus on page 1, column 2, lines 22 to 43, of the patent, the passages 5 are described as provided by the crimped or corrugated screen 4 and the change of direction of said passages is described solely in connection with the description of the corrugations of sheets 4 [Patent in suit, p. 1, col. 2, lines 22 to 43, R. 839].

The patent also describes the flat or uncrimped screening members 9. These flat screening members merely provide slight additional dust collecting surfaces, facilitate the process of manufacture and stiffen the filter. [R. 111]. The only purpose asserted for the flat screens of the patent in suit is as follows:

"* * * the flat or uncrimped screening members
* * * serve both to define more restricted passages for the flow of air and also to better retain the filter members 4 in their desired positions. The flat screens 9 also aid in the filtering action, providing surfaces for collection of air by impingement action."
[Pltf. Ex. 1, p. 2, col. 1, lines 7-14.]

Claims 4, 5, 7 and 8 of the patent in suit cover the crimped mesh screening members defined as not only extending in the general direction of the air flow through the panel but as effecting "a multiple subdivision of the panel in both dimensions perpendicular to the general direction of flow." This language does not appear in the specification but it is conceded that such language is readily understood in connection with the specification

and drawings [R. 360]. Examining, for example, either Figures 1 or 2 of the drawings [R. 839], one of the two dimensions specified is along lines horizontal to the figures while the other dimension specified is along lines vertical to the figures. The direction of air flow is perpendicular to the plane of the figures and thus perpendicular to both the horizontal and vertical dimensions of the drawing.

Each successive sheet divides the panel in the vertical direction and the curved, crimped, or corrugated wire screens divide the panel in the horizontal direction. Thus the air passages at the face of the panel appear as roughly triangular and there is a very large number of these small air passages provided. The importance of this division of the panel and the small passages is pointed out in the specification, for example, in the patent, page 1, column 1, lines 40-53.

The air filter panel of the patent in suit thus consists essentially of (a) a plurality of sheets of *corrugated wire screens* arranged *parallel* to the direction of air flow and *forming air passages* through the filter which are independent of the openings in the screen; (b) the arrangement of the corrugated wire screen sheets to *divide the panel* both in the horizontal and vertical dimensions into a *multiple of small* passages, the walls of which are formed by the mesh of the wire screens; and (c) the formation of passages having *an angle* therein so as to change the direction of air flow [R. 127].

While there is thus formed passages for the flow of air distinct from the openings of the screen it is to be understood that the air filter panel of the patent in suit is dependent for its filtering action on the air actually

passing through the openings of the screen. Thus the patent points out:

“* * * It is to be understood, of course, that certain portions of the air will flow through the mesh of the screens into adjoining passages, but as the mesh of the filter members becomes progressively loaded with dirt the flow of air becomes more and more confined to the flow through the entrance and exit passages.” [P. 2, col. 1, lines 23 to 29.]

and

“* * * This indicates that the air entering the passage 7 is almost immediately broken up into fine streams of air flowing through the screening openings of the wire forming the passage. * * * This action continues, without substantial increase of the static pressure or resistance to the flow of the air, until all portions of the screen forming the walls of the passage 7 have become thoroughly coated with dust.” [P. 2, col. 2, lines 18 to 33.]

At the trial photographs were introduced to illustrate progressive loading in both the air filter panels of the patent in suit and in the infringing Air-Maze P-5 filter panels. The dust is collected near the entrance side of the panel and partially closes first the openings at the entrance side. These photographs are present as plaintiff's physical Exhibits 9A to 9J showing the Farr filter panel and 14A to 14G showing the accused Air-Maze P-5 filter panel [R. 129-136 and R. 163-166].

The flow of air through the openings of the screen rather than merely through passage 7 is in part dependent upon the angle placed in the crimp of the crimped wire sheets. Thus the patent says:

“* * * The abrupt turn in the passage provided between the entrance and exit portions 7 and 8 af-

fords two important functions in the operation of the screen. One function of such bend is that it imposes some pressure drop to the flow of air directly through the passage 7, effective for forcing the air through the openings of the screen forming the passage. This function is important because the *filtering efficiency of the filter is dependent upon the fact, to a large extent, that the air rather than flowing in a stream through the passages 7 and 8 is caused, in fact, to flow through the walls of such passages and the screening openings there provided.*" [P. 2, col. 2, lines 32-46.]

**The Patent in Suit for the First Time
Provided a Filter Panel Possessing High
Efficiency in Removing Dust With a Relatively
Low Pressure Drop Which Rises Relatively
Slowly.**

The lower court found:

"6. The air filter panels of the Farr patent in suit combined the ability to provide a high efficiency in removing dust from air with a lower pressure drop than previous commercially built filters which pressure drop did not increase as rapidly as previously built commercial filters as the filter became loaded with dust, * * *" [R. 60].

"9. The Farr patent in suit does not disclose an aggregation but does disclose a new combination of old elements which cooperate together to provide not only advantages in the cleaning of the air but benefits in cost of manufacture, maintenance and upkeep." [R. 61.]

These findings are not only fully sustained in the record below but they are the only findings which the record could support. The record established conclusively that

air filter panels of the type of the patent in suit are sold to men of high technical training [R. 259]. These men have, from a time long preceding the date of the Farr patent in suit, learned to evaluate air filter panels by comparative tests which illustrate the efficiency of the filter in removing dust from air and the pressure drop of such filter. The results of such tests are regularly in this art illustrated by curves or charts which are contained in the bulletins of the air filter manufacturers. Such curves appear, for example, in the catalog of the Air-Maze P-5 filter panel at the top of sheet 3 [Ex. 4].* They also appear in the Farr catalog, for example, *Exhibit E* on the last page and Exhibit 7 on the fourth page.

Appellants produced as their expert witness Frank B. Rowley, Professor Emeritus of the University of Minnesota, who had some twenty-five years' experience in testing and evaluating air filters [R. 476]. As early as 1933 the American Society of Heating and Ventilating Engineers had sought to introduce a certain standard code by which air filters should be tested [R. 478]. The importance of this type of investigation of air filters is further shown by the action of the Association of American Railroads. In 1937 that Association had an elaborate series of tests conducted by Appellants' witness Rowley for the purpose of evaluating by such tests all commercially sold filters. The results of these tests so conducted by Rowley are in evidence as Plaintiff's Exhibit 27 published January 15, 1938 [R. 609, 610]. The memorandum opinion of Judge Hall demonstrates the importance placed by Judge Hall on the exhaustive and painstaking study of filters

*Exhibit 4 is not reproduced in the Book of Exhibits but appears here by stipulation in its original form.

made in the art as particularly evidenced by this report, Plaintiff's Exhibit 27,* which is clearly identified in the record by Appellants' witness Rowley. Appellants' contention that this report is hearsay is not supported by the record. The record shows that the tests referred to in this report were performed by Appellants' witness Rowley who, although he did not write the full report, furnished the data, examined the report after it was published, performed the tests reported therein, provided the pictures, and subscribed to the conclusions set forth in such report [R. 610-621 and 629-657].

Plaintiff's Exhibit 27 contained some twenty-eight dust test performance curves on different filters. Similar curves were presented to the Patent Office in the prosecution of the Farr patent in suit [R. 875] and Plaintiff's Exhibits 11, 13, 29, 30, 31, and Defendants' Exhibits HH, MM, NN, VV, XX and ZZ are further dust test performance curves which form the basis of the Findings of Fact of the lower court. In considering these dust performance curves it should be appreciated that it is difficult to make comparisons unless tests were performed using the same test dust [R. 574, 718, 719]. Dust particles of large size are easier to remove than dust particles of small size [R. 716-718]. The presence of lint in the dust will cause the panel to clog up relatively rapidly [R. 719]. The art has not yet agreed upon any standard test dust. The American Society of Heating and Ventilating Engineers' Code specified a dust containing 50% carbon black

*Exhibit 27 is not reproduced in the Book of Exhibits, although originally stipulated to be reproduced, because of the insistence of the Clerk that the reproduction of this exhibit would be very expensive. This important exhibit is now by stipulation present in its original form, which stipulation approved by this Court provides it may be considered in its original form.

and 50% Pocahontas ash [R. 486]. The test as performed for the Association of American Railroads employed a dust containing 50% Pocahontas ash, 20% lamp-black, 10% Fullers Earth and 20% Fly Ash [Ex. 27, p. 4]. Rowley in his test performed for the purpose of this case employed 80% Pocahontas ash and 20% carbon black [R. 488]. The Bureau of Standards endorses a dust containing 96% Cottrell Precipitate and 4% lint [R. 492].

The Farr Company in some of its earlier test procedures used a dust collected from a ventilating system but as shown hereafter has conducted tests with various other dusts. It has now adopted for its test procedure a test dust developed in the last war to test air filters. This test dust is a natural earth material obtained in Arizona and is guaranteed in particle size analysis [R. 119, 120]. This test dust is adopted by Farr because it gives more significant results [R. 120].

There exists in the record four distinct sets of test data, the individual tests of a set being performed with the same test dust. Each set, when considered by itself, clearly demonstrates the unique performance characteristics of the Farr filter panel in suit.

The first of these are those contained in the file history of the patent in suit. During the proceedings leading to the grant of the Farr patent in suit there was submitted to the Patent Office the test results on three different filters. These results are shown in the curves on the exhibits to that affidavit [R. 875]. The curves marked "1" were obtained by testing the filter panel of the Farr patent in suit. The curve marked "2" are tests obtained on the Air-Maze Type B filter, and the curve marked "3" was obtained on the Detroit paper filter. The comparison is

most easily obtained by examining the curves [R. 875]. These curves show that the Detroit paper filter has an efficiency of about 10% less than the Farr filter and that the Air-Maze Type B filter has a much more rapidly rising pressure drop than the Farr filter [R. 261-267].

Appellants' suggestion (App. Br. p. 10) that these tests are "fantastic" as to the 90% efficiency of the Farr filter finds no support whatever in the record and Appellants have made no reference to anything in the record to support its statement. It is to be noted how accurately this test conformed to the testimony of Appellants' witness Watterson with respect to the Detroit paper filters. Watterson testified that they were from 7% to 10% less efficient [R. 330].

The second set of test data consists of the tests run by Professor Rowley for the Association of American Railroads on all commercial filters made previous to the Farr invention as shown in Plaintiff's Exhibit 27 considered with Plaintiff's Exhibit 29 [R. 977]. Plaintiff's Exhibit 29 is a report on tests of the Farr filter performed using the identical dust utilized by Rowley in making the test of Plaintiff's Exhibit 27. Plaintiff's Exhibit 27 shows tests on a very large number of filters, *i. e.*, paper filters by the American Radiator Company both in single section and in tandem, and tests on filters made by the Annis Air Filter Company, the Brillo Manufacturing Company, the Burgess Battery Company, the Independent Air Filter Company, the Owen-Illinois Glass Company, the Plymouth Cordage Company, the Safety Car Heating & Lighting Company, Wilson and Company, American Air Filter Company and the Air-Maze Company. It was these tests which were mainly relied upon by the lower court in its findings that the patent in suit repre-

sented a distinct advance over the prior art [R. 821, 822].

Exhibit 27 contains three charts on the Air-Maze Type A or Type B filter, Figures 6, 7 and 8. They all show a relatively rapid rise in pressure drop as the dust load increases, which is characteristic of the Type A or Type B filter. They all show an efficiency comparatively low to either the filter of the Farr panel in suit or Appellants' infringing P-5 filter. For example, Figure 8, Exhibit 27, which is the Air-Maze 2-inch Type A filter, has an efficiency starting from 75% to 80% and ended at 80% after eight hours of test while the pressure drop rises from 0.15" and ends at 0.44" [R. 630].

Exhibit 29 is a publication of the Farr Company made of tests performed by Duncan in 1942 [R. 711]. Duncan reproduced the tests of the American Association of Railroads using the dust there employed [R. 713]. The graph accompanying Exhibit 29 contains three curves. One represents the filter of the American Air Filter Company, one represents the Air-Maze Type A filter, and the third represents the Farr filter. As shown from such curves the Farr filter has a higher efficiency than either of the others and the pressure drop of the Farr filter changes in the tests from an initial value of 0.05" to only 0.1." The Air-Maze Type A filter has the rapidly rising pressure drop starting at 0.15" and ending at 0.44." The pressure drop of the American Air Filter Company's panel was consistently higher than that of the Farr Company [R. 713].

Figure 23 of Exhibit 27 again shows a startling lower efficiency of the paper filters as compared with those made with screen wire. The starting efficiency of a paper filter is only 65% as compared with the Farr efficiency of 90%, the Air-Maze starting efficiency of 75%, and the starting

efficiency of the American Air Filter Company of 79%. All of these tests were conducted with identical dust under substantially identical conditions [R. 637 to 642].

The third set of test data which demonstrates the unique performance of the filter panels of the Farr patent in suit, is a test conducted by Duncan with the Farr Company's new and improved test procedure. The Farr Company has expended great effort in developing a more perfect test procedure. Their new test procedure is shown in the technical report to the industry, Plaintiff's Exhibit 8.

The inaccuracies of earlier test procedure is illustrated in the testimony of Rowley [R. 585-593] wherein it is brought out the actual measurements obtained by Rowley differ quite radically from the curves he drew representing such measurements. He testified:

"It is our experience in testing any of this kind of apparatus and rating it, that you cannot get curves to fall right on the lines, * * *." [R. 592.]

At the trial Professor Rowley was invited to and did examine the Farr test procedure and admitted that within the Farr test measurements the measurements corresponded closely to the curves [R. 593], and plaintiff stipulated:

"* * * we are willing to stipulate that the Farr Company has very fine test apparatus, that Professor Duncan gets accurate results with it, and that the Farr Company test procedure for the purposes of this action is the best in the world." [R. 593.]

The data obtained from tests on this new test procedure is shown on Plaintiff's Exhibits 11 and 13. Plaintiff's Exhibit 11 is a comparative test of the Farr filter

panel of the patent in suit and the Air-Maze Type B filter panel. It requires but a simple inspection of this curve to notice the characteristic differences in the pressure drop of the two panels. In the case of the Air-Maze filter the pressure drop of the Air-Maze Type B filter started at 0.13" and ended at 0.50". It is noted that the pressure drop rises very rapidly after 600 grams of dust load is on the filter. The pressure drop of the Farr filter in comparison therewith starts at 0.10" and rises only to 0.13". [R. 145 to 149.]

Plaintiff's Exhibit 13 is a graph on the performance of the Air-Maze infringing P-5 filter as compared with the Farr filter of the patent in suit. It requires but a simple inspection of this chart to show that these two filters operate substantially similar both as to efficiency and pressure drop. The pressure drop of the two filters is so closely identical that over the major portion of the test a single line represents the pressure drop of both filters and at the end of the test the P-5 filter is only slightly higher than that of the Farr filter panel [R. 159 to 161].

The fourth set of the test data which demonstrates the unique characteristic of the Farr filter panel in suit is that provided by the test made for the trial by Professor Rowley. Professor Rowley tested only the Farr filter panel of the patent in suit, the accused Air-Maze P-5 panel and a model allegedly (although as shown hereafter not) made in accordance with the disclosure of the prior art patent to Niestle [Deft. Ex. B, Tab 15, R. 1063]. He made no test by which we can compare the performance of the old Air-Maze Type A or Type B filters or the Detroit filters. The results of Professor Rowley's tests on the P-5 filter and the Farr filter are in evidence

as Defendant's Exhibits HH and JJ. To compare these results Duncan replotted the same on a single chart, Plaintiff's Exhibit 30 [R. 984]. As shown on Plaintiff's Exhibit 30 Professor Rowley's test again demonstrates that the accused P-5 filter and the Farr filter are similar in efficiency and the pressure drop characteristics are identical both in rising comparatively slowly so that up to a load of about 550 grams the pressure drops are identical and represented by one curve there being but a slight rise in the curves thereafter [R. 599-603, 722-725].

The only alleged prior art filter with which these can be compared is Rowley's tests on the model allegedly constructed in accordance with the Niestle French patent. The results of his tests on that model appear on Defendants' Exhibit MM [R. 513-515]. In this exhibit it is to be noted that the pressure drop started at 0.10" and rose at such a rapid rate as to become nearly 0.5" at the conclusion of the test. A mere visual comparison of Plaintiff's Exhibit 30, which shows the test performed by Rowley on the Farr filter panel and the accused Air-Maze P-5 filter panel, with Exhibit MM is sufficient to show that both the Farr filter panel and the infringing P-5 filter panel are high in efficiency as compared with the alleged model of the Niestle patent and differ radically in the rate of pressure drop rise from the model of the Niestle patent.

Findings 5, 6, 8, 9, 10, 11, 12 and 13 of the lower court are fully sustained. Plate I attached to Appellants' brief makes no honest effort to correctly set forth to this Court what these tests demonstrate. While Appellants admit that the test results obtained using different dusts were not comparative (App. Br. p. 8) Plate I fragments some of the results of tests using different dust all in one

group. More than this, Appellants adopt the unique procedure of giving the values up to only the figure of 600 grams dust load or to the end of the test as Appellants state "whichever earliest." The reasons for Appellants' action in this respect is illustrated most easily from Plaintiff's Exhibit 11. As shown on Plaintiff's Exhibit 11 it is only after the old Air-Maze Type B filter has been loaded to within the neighborhood of 600 grams that a rapid rise in pressure drop occurs. By this selection of figures the Type B filter is indicated as having a final pressure drop of 0.17" or a rise of 30%, whereas Exhibit 11 shows that the final pressure drop was 0.5", or a rise of 290%.

The tabulation of Appellants in their brief also includes figures on the test of the Detroit air filter using different dusts and gives these figures "at the end of the test" without mentioning the fact that these tests on the Detroit air filter were terminated at very low dust loads. Duncan explained the reason the tests on the paper filters had to be terminated at a low dust load was because the nature of the adhesive would not permit a continuation of the test [R. 212 to 214].

Reference is also made by Appellants to the tests run in the presence of both Duncan and Rowley using dust recommended by Rowley in the Farr apparatus. This test was run with an air velocity in the filter much higher than velocity during Rowley's tests and is responsible for the greater pressure drop shown on this test [Pltf. Ex. 31] over that shown on Rowley's test, also plotted on Exhibit 31. There was unfortunately not time enough after this test was suggested for similar tests to be run on the P-5 filter or the old Air-Maze Type B, or the Detroit paper filters, or the alleged models of the Niestle patent.

Standing by itself, therefore, this test only confirms the extraordinary accuracy of the Farr test procedure indicating how each successive measurement fell in line with the previous one. If similar tests had been made on the prior art filters they would all have shown either a more rapid rise in pressure drop than indicated on this test or marked lower filter efficiency [R. 735].

The Farr Company recommends that its filter be cleaned at a dust load of 600 grams but the ability of the Farr filter panel to perform satisfactorily above such a load is unquestionably a factor of major importance in the use of air filters. A filter in which the pressure drop rises rapidly may have the effect of unbalancing a ventilating system or decreasing the air intake to an engine so as to decrease the horsepower, or where used in a home system results in burning out of the fire box [R. 285, 286]. While the manufacturer recommends filters be cleaned at a certain dust load the human element enters and in many applications the dust load on filters may rise greatly in excess of that intended by the manufacturer [R. 286, 287].

The fact that the Farr filter was the first to combine high efficiency in dust removal with a low pressure drop which rises but slowly is not only fully supported by the test data shown above but actually amounts to a substantially conceded fact. The testimony of Watterson, Vice President of the Air-Maze Corporation, clearly establishes this. This witness conceded, first, that the Detroit air filter was 7 to 10% less efficient in removing dust although providing a low pressure drop rise [R. 330]. He identifies the first air filter panel manufactured by the Air-Maze Company having high efficiency and low initial pressure drop which rose slowly with dust load, as the "P-5 Obsolete" filter made by Air-Maze long subsequent to the

issue of the patent in suit [R. 327]. This filter proving unsatisfactory the customers compelled Air-Maze to put out the infringing P-5 filters [R. 328]. The Air-Maze Company, although regularly making tests on all its filters [R. 327], and although still selling the old Type A and Type B filters, as well as the accused P-5 filter, produced no comparable tests of these two types of filters run with the same dust under comparable conditions.

**The Combination of Elements of
the Farr Patent in Suit With the
Resulting Characteristic Performance
Is Not Disclosed in the Prior Art.**

The lower court found that the Farr patent in suit disclosed a new combination of old elements [Finding 9, R. 61] combining old elements in a new way so as to provide a new mode of operation and new characteristic performance [Findings 3-6, incl., 8-14, incl.]. These Findings of Fact are fully sustained by the evidence and should not be disturbed here. (*Williams Mfg. Co. v. United Shoe Mch. Corp.*, 316 U. S. 364, 86 L. Ed. 1537.)

Appellants *merely cull* from one or another prior patents *elements* of the combination in suit *without showing that the combination is old* or without establishing that there exists in the prior art any filter panel combining the elements of the patent in suit or possessing its new mode of operation or characteristic performance.

Appellants first referred to the prior art "generally" and thereafter argued invalidity specifically with respect to the prior Detroit air filter, the Farr '480 patent and the prior patents to St. Cyr and Niestle (French). The remaining prior art patents, including those to Henshaw, Preble, Slausson, Orem, Merryweather, Wood and the British patents to Kirkham, Row and Moller, are referred

to merely as allegedly disclosing *separate elements* of the patent in suit totally ignoring the radical differences that exist between the structures disclosed in these patents, their modes of operation and performance over that of the Farr patent in suit. Of these prior art patents the lower court dismissed the patents to Wood and the British patents to Kirkham, Row and Moller on the ground that they were patents

“* * * in which liquid is supplied continuously or intermittently so as to wash away any dust collected, are not filter panels operating on the principle of impingement of particles on collecting surfaces and do not remove dust by the same mode of operation referred to in Finding 4, * * *” [Finding 10, R. 61.]

In operation of the filter panel of the Farr patent in suit the panel is oiled, and in use the oiled filter operates to collect the dust by impingement action and the art is principally concerned in this type of filter with its characteristics, such as efficiency in removing dust and pressure drop as the filter becomes progressively loaded with dust. Dust, of course, may be removed from air in a great variety of ways. There exists in the prior art, as illustrated by the patents cited by Appellants, a number of devices in which the dust is removed from the air by surfaces continuously supplied with water or other fluid, the dust being collected by the fluid and continuously carried away thereby substantially as fast as deposited. Devices of this type very clearly operate on a different mode of operation, with entirely different results than the Farr filter panel, and, of course, could not disclose or indicate to the art the character or mode of operation to be attained by a device such as the patent in suit where the dust is retained in the panel.

Thus, considering first the Row (British) patent [Deft. Ex. B, Tab 13] while this patent discloses a device stated to be made out of sheets of perforated metal or woven wire which are corrugated [R. 429], the filters of this panel are provided with a chamber at the top of the plates and a collecting chamber at the bottom of the plates for the delivery of water [R. 434] and the water is the thing that cleans the air.

“The Court: * * * In other words, is the water the cleaning agent in this device or is it the plates?

The Witness: Well, it is the water that is on the plates that is the cleaning agent. * * *.” [R. 437, 438.]

As shown on Plaintiff’s Claim Chart [Ex. 32] for example considering Claim 4 [R. 986] this patent is therefore not an impingement filter operating to collect particles on a collective surface—the water collects and washes away the dust. It does not subdivide a panel in both dimensions [R. 763]; it does not have the mode of operation of the Farr filter panel as there is no progressive loading of the panel with dust.

The British patent to Kirkham [Deft. Ex. B, Tab 12] is a device intended for washing and scrubbing gas, not for a device for collecting dust by the impingement system [R. 423]. The patent discloses but one section of a rotor device which is intended to rotate in a liquid tank [R. 425]. While it is disclosed as made out of corrugated sheets some of which it says may be wire gauze, in practice the device is rotated in a tank so as to be dipped in water [R. 426], the channels of the corrugated plates being occupied with water. In connection with Plaintiff’s Claim Chart [Ex. 32] it is to be noted that this patent

does not disclose a filter operating on the principle of impingement of particles on collecting surfaces and does not have the mode of operation of being progressively loaded or include any of the elements 1, 3, 6, 7 or 8, for example of Claim 4 of the patent in suit [R. 766].

Similarly, the British patent to Moller [Def't. Ex. B, Tab 14] discloses a number of corrugated plates carried by a link chain which rotates in a pan of water [R. 453]. While the plates on this link chain are corrugated so as to have troughs or pockets, the patent points out that these are "for scooping up the wetting liquid" [R. 455], so that these troughs are occupied by water as the device goes to the top [R. 455, 456]. While Appellants' witness Russell testified that this device might be made out of fly screen he would not even venture an opinion as to how long the device would last so constructed [R. 457]. Plaintiff's Claim Chart [Ex. 32] shows, for example, in connection with Claim 4, that this patent is not an impingement filter, does not have the mode of operation of the Farr filter panel in becoming progressively loaded with dust, and does not include elements 1, 3, 6 and 8 of the patent in suit [R. 767, 768].

The Wood patent [Def't. Ex. B, Tab 11] Figures 1 to 11, inclusive thereof, again shows a device made of solid corrugated plates [R. 420]. These are operated in connection with a liquid bath [R. 421].

The lower court in its memorandum opinion properly dismissed from consideration the prior art patents to Wood, Kirkham, Row and Moller [Def't. Ex. B, Tabs 11, 12, 13 and 14] by stating:

"As to the other patents here that involved washing, it seems to me that it is an entirely different use, a different object, * * *.

In all of the cases involving water the air is washed and they do not operate upon the impingement theory. They might impinge for a moment, but they are immediately washed off. So I do not think any of those anticipate completely the elements of the claims of any of the four claims in suit here." [R. 819.]

The prior art patents to Henshall [Deft. Ex. B, Tab 2] and to Merryweather [Deft. Ex. B, Tab 7] are two of the patents cited by the Patent Office in the prosecution of the application for the patent in suit. Neither shows a filter panel approximating the construction of the patent in suit and neither shows a filter panel operating like or capable of a performance similar to that of the patent in suit.

In the Henshall patent the filter is made using a number of angled perforated plates. These angled plates provide channels between for the flow of air. They are not made of screen wire and the perforations in the different section of the plate are graduated in size, the larger being in the front section and the smaller at the rear section [R. 375]. The Henshall device makes no division of the air stream whatsoever in a horizontal direction and therefore lacks the multiple subdivision of the panel [R. 744, 745]. Since these channels extend without any interruption horizontally across the filter, the air stream is not broken up into the maze of small air filaments which is so essential to the characteristic performance of the Farr filter panel. Thus if the 20 x 20 panel was made following the Henshall design with the plates spaced apart with the spacing of the Farr filter panels there would be only 78 channels in the Henshall patent extending horizontally from one side of the filter

to the other as compared with substantially 6200 divisions of the Farr filter panel [R. 745, 746].*

The Merryweather patent is even less pertinent. This discloses a panel containing merely a set of diagonally disposed wire screens having large channels between them each extending completely horizontally across the filter. There is thus no multiple subdivision of the panel in two dimensions as is necessary for the performance of the Farr filter panel in suit [R. 753].

When these patents were cited by the Patent Office Examiner it was pointed out that there was no division of the air passages of the filter in either of these patents in a horizontal direction [R. 919-922]. It is there pointed out that in a 20 x 20 panel in these patents there would be only 76 air passages against substantially 6200 for the Farr panel [R. 921, 922].

Appellants made no attempt to establish that either the device of this Henshall or the Merryweather patents would have the performance and characteristics of the Farr patent in suit. Appellants' witness Russell admitted that he had never seen any filters constructed in accordance with these patents [R. 377]. Plaintiff's Claim Chart [Ex. 32] clearly shows that these patents do not include the combination of the patent in suit [R. 752, 753].

The Orem patent [Deft. Ex. B, Tab 6] has no resemblance either in structure or mode of operation to the Farr patent in suit. It consists essentially of a number of concentric screens providing a plurality of annular spaces which are connected together to provide a *single* passage for air through the filter [R. 397, 752]. This is to be

*The record states 62000 rather than 6200 divisions but 78 squared is 6184, *i. e.*, about 6200.

contrasted with the construction of the patent in suit whereby some 6200 passages are provided [R. 751, 752].

The prior art patents to Preble [Deft. Ex. B, Tab 4] shows the filter made of three sections, a central section formed of stacks of expanded metal and two end sections having a plurality of wire screens set as in the old Air-Maze Type A or Type B filter so that the air flows perpendicular to the screens. This patent does not combine the elements of the patent in suit or have anything simulating the mode of operation of the patent [R. 747-750]. The casual instructions of the patent are sufficient to justify the lower court's remarks:

"I would not waste any time on it because I do not think it anticipates the combination here. It teaches that there should be these straight screens, both inlet and outlet side." [R. 818.]

No attempt was made at the trial to establish any of the above prior art patents possessed the novel characteristics of the Farr patent. No attempt was made to establish that any one of these patents would give high efficiency combined with a low pressure drop which rises slowly. None of these prior art patents show in combination (a) a corrugated wire screen positioned parallel to the flow of air; (b) the corrugations dividing the air stream horizontally and vertically in a multiplicity of small passages, and (c) angles into the passages resulting in a filter in which the air flows mainly through the mesh until the passages become loaded with dust. The only other prior art patents using wire screen in an impingement filter is the Greene patent under which Air-Maze manufactured their Type A and Type B filters. In this patent the filter has no passages except through the mesh of the screen. Appellants have made no honest ef-

fort to refute the Findings of the trial court as to the novel and surprising new results of the filter panel of the Farr patent in suit. The Farr patent clearly discloses a new patentable combination of elements with a very surprising new performance in filtering dust in no way suggested by the prior art.

The Detroit Paper Filter.

Appellants assert that the patent in suit is invalid in view of the Detroit paper filter but not on the ground that the Detroit paper filter discloses the Farr air filter panel, or its mode of operation, or the characteristic performance of the Farr patent. Appellants must concede that the Detroit air filter has a different physical construction, a different mode of operation and entirely different performance characteristics. The basis of appellants' assertion is that if one had substituted wire screen for the paper of the Detroit filter a filter would have been produced having substantially the same physical construction, mode of operation and characteristics of the Farr patent in suit. Appellants contend that this substitution would not have required invention notwithstanding the expressed findings of the lower court to the contrary, which it is believed are supported overwhelmingly by the record.

The prior art patents to Kaiser [Deft. Ex. B, Tab 8] and Manning [Deft. Ex. B, Tab 9] describe and illustrate the Detroit air filter. Grouped with these patents may be considered the Slauson patent [Deft. Ex. B, Tab 5] which is another form of a solid wall filter described as made of wool felt or cotton cardboard [R. 393]. Grouped also with these patents is to be considered the patent to Wood [Deft. Ex. B, Tab 11], particularly Figures 12 to 15 thereof, which shows an air filter made of solid metal corrugated sheets [R. 420].

Paper filters of the type shown in the Kaiser or Manning patents are made of corrugated paper with no bend or angle in the corrugations [see, for example, Figure 1 of the Kaiser patent, R. 1022] but the practice has been to employ two sections in tandem as illustrated in Figures 5 to 7 of the Kaiser patent [R. 1022], or as illustrated in the Manning patent, Figures 2 or 7 [R. 1026] with the corrugations of the different sections at an angle thereto.

Appellants' suggested modifications of the Detroit filter panel amounts to a change not only in the material of the construction of the Detroit air filter but a change in the Detroit filter from one having solid wall passages to one having passages made with mesh material open for the circulation of air through the mesh. It is a change which introduced an entirely different mode of operation than that possessed by the Detroit air filter and it is a change which would produce an entirely different performance. In the Detroit air filter the passages are defined solely by grease-covered paper walls. There is no opportunity for the circulation of air through these walls [R. 197] so that the filtering efficiency and performance of the Farr filter panel, which is dependent thereon [R. 128] cannot be achieved. The art had before it no information which would suggest that any benefits or advantages would be obtained by constructing the Detroit air filter panel from wire screen.

The lower court made a direct Finding that the Farr filter panel was not obvious from the prior use of paper filters and the prior use of filters using wire screen [Finding 14, R. 63]. The record in support of this Finding is believed conclusive. On this issue we call the Court's attention to the following uncontroverted facts:

First, the Detroit air filter has been on the market since 1932 by the Detroit Air Filter Company and its predecessors in interest [R. 330]. The Greene patent under which Air-Maze manufactured issued in 1925, and the Air-Maze Type A and Type B filters had been on the market for undoubtedly a greater period of time.

Second, these filters are sold mainly to people of high technical training, such as the engineers or architects designing ventilating systems or the intakes to engines [R. 258, 259, 278].

Third, it was a known fact in the industry that the Detroit paper filters, while giving a low rise in pressure drop with a dust load, were 7 to 10% less efficient in removing dust than filters of screen wire, such as the Air-Maze Type A or Type B filters [R. 330].

Fourth, these filters, the Air-Maze Type A and Type B and the Detroit air filter, along with all other commercially known filters, were given side-by-side tests by the art, as demonstrated by the publication of the Association of American Railroads [Pltf. Ex. 27], and the engineers noted the radical difference in performance of these and the defects of each, and found no suggestion from this side-by-side testing of the invention of the Farr patent in suit [R. 821].

Fifth, the art was experimenting at all times seeking to find a better form of air filter. Prof. Rowley testified that he had twenty-five years' experience in this field in testing filters and in research and development work pertaining to filters [R. 478, 479].

Sixth, immediately after the filter panel of the Farr patent in suit was developed, it went into commercial use and in a few short years, without money or resources, notwithstanding the well entrenched position of powerful

competitors, the Farr filter panel business was built up to one of major importance in the field.

Seventh, the new characteristic performance of the Farr filter panel in suit compelled the art to meet the competition. Air-Maze found it necessary to make its substantially infringing copy of the patent in suit in order to have a filter panel with the high efficiency and low pressure drop rise characteristic of the patent in suit.

The lower Court heard the evidence and in its memorandum opinion given at the end of the trial summarized the situation as follows:

“Another thing that strikes me in that connection was the very exhaustive and painstaking study made by Professor Rowley for the Association of American Railroads, and his report—I do not recall the evidence as to when it was completed—but the report of the railroads bears the date of 1938, and as I recall I believe he said he conducted the experiments within the previous year. As a result of that study no suggestion was made for the substitution of wire gauze, for instance, for paper, such as is disclosed in the paper filter on file here—I have forgotten the name or the number of the patent. I believe that was the Kaiser patent?

Mr. Leonard S. Lyon: Yes, your Honor.

The Court: Moreover, the mere fact of that exhaustive study made by Professor Rowley would indicate that the industry interested in the matter of air conditioning or air cleaning or air filters was going to great pains and great lengths and spending a great deal of money and doing it scientifically in order to find what apparently the plaintiff put together here in a combination, a successful and novel and useful invention.” [R. 821, 822.]

In view of the rule that the Findings of Fact of the lower Court are not to be set aside where they are supported by substantial evidence, we do not see how there can be any issue before this Court as to the fact that the patent in suit was not a mere obvious substitution of wire screen for paper in the Detroit air filter. No rational explanation can be offered for the failure of all the skilled and scientific men who investigated air filters to have produced the Farr filter panel even though they had before them the Greene patent and the Detroit air filter on side-by-side tests unless one accepts the Finding of the lower Court that invention was actually involved. No explanation can be presented for the fact that the art suffered for years with the problem of having either to use a filter of low efficiency—the Detroit air filter—or a filter of high efficiency which had a rapid rise in pressure drop when loaded with dust. No other explanation is available for the marked commercial success of the Farr filter panel in suit immediately upon its introduction into the art, such as necessitated the Appellant Air-Maze Company copying the same, except that it represented a real invention in the art.

Prior Art Patents Specifically Relied Upon by Appellants.

Appellants' difficulty in finding in the prior art any air filter panel which combined the elements of the Farr filter panel in suit or possesses the mode of operation of the Farr patent in suit, or is capable of achieving the new and surprising results of the Farr patent in suit is emphasized by the character of the three specific patents selected by Appellants for detailed discussion in comparison with the Farr patent in suit. These three patents are the Farr '480 patent, the St. Cyr patent and the Niestle (French) patent.

The Farr '480 Patent: Appellants contend that the patent in suit is invalid over the Farr patent on the humidifier. In making this contention Appellants overlook the fact that the Farr '480 patent relied upon is not prior to the patent in suit and that the disclosure is, therefore immaterial to the patent in suit. Morrill N. Farr is the inventor and patentee of both the patent on the air filter No. 2,286,479 here in suit [Pltf. Ex. 1; R. 839] and Patent No. 2,286,480 [Def't. Ex. B, Tab 10; R. 987]. Both patents issued on the same day, the patent in suit on the air filter panel having the lower patent number and issued on an application filed earlier than the application for '480 patent. The original application for the patent in suit was filed on July 22, 1939, whereas the application for the '480 patent was filed on July 1, 1940. Appellants in their brief rely on the fact that commercial sales of the device of the '480 patent were made on November 19, 1937 (App. Br. p. 12), but such sales were less than two years earlier than the filing date of July 22, 1939, of the original application for the Farr patent in suit. Rev. Stat. 4887, then in effect, provided two years from the first public use of the invention to file an application for patent. The present statutes, which limit the period to one year, was not enacted until August 5, 1939, and did not go into effect until August 5, 1940 (35 U. S. C. A., Sec. 32, 53 Stat. 1212).

Appellants are in the impossible position of having to contend on the one hand that such sales of the humidifiers do not establish a date of invention by Farr of the filter panel in suit (for the purpose of confining the date of invention of the patent in suit to July 22, 1939) and on the other hand argue that the invention of the Farr filter panel was embodied in such humidifiers. Obviously both contentions cannot be correct. If the inven-

on of the Farr filter panel in suit is embodied in the humidifier screen it was made at least as early as the date such screens were sold and the patent in suit was filed within the statutory period. If it was not embodied therein then, of course, the '480 patent is immaterial to the validity of the patent in suit.

Actually the evidence clearly shows that the humidifier of the Patent '480 was neither identical in construction, mode of operation or performance with the filter panel of the patent in suit. The '480 patent shows a large cylinder rotor made up of corrugated wire screens and flat wire screens. A photograph of the screen of the commercial rotor is in evidence as Plaintiff's Exhibit 26. This rotor is attached to a motor marked "13," (Figure 1) which causes the power portion of the screen to rotate continually in a basin 14 which carries a water bath therein. The device is utilized for the purpose of humidifying and cooling air [R. 757-761]. It rotates sufficiently rapidly that it is wet with water and water continually moves downward, or as the lower Court said "trickles" [R. 760]. The air is contacted not with oiled wire surfaces but by the water and if there is any dust removal in such a device it is by the water which catches the dust and carries it down to the water bath [R. 757]. Physically this device differs from the Farr patent in suit in being a rotor rather than a panel. It only has one set of crimped wires; it has no bend in the corrugations. The fact that the material is wound spirally does not substantially change the direction of the passages. This is the same contention as made in connection with the St. Cyr patent and fully discredited by the photograph Plaintiff's Exhibit 26 [R. 975].

Plaintiff's chart, Exhibit 32, clearly shows that the claims of the patent in suit do not include the humidifier

of the '480 patent. It is not a filter panel operating on the principle of impingement of particles on collecting surfaces—the dust is caught by water which trickles down with the dust to the water bath. It has no change in direction of the passages as defined by the claims [Ex. 29]; it certainly does not have the mode of operation or the progressive loading of the patent in suit [R. 757-760].

The St. Cyr Patent: The St. Cyr patent is described in the patent itself as

“* * * a device for mixing vaporizing liquid fuels and the object thereof is to provide simple and efficient means for rapidly and perfectly vaporizing and mixing the fuel.” [St. Cyr Patent, R. 989, p. 1, col. 1, lines 8-12.]

The intended purpose for using this device is shown in Figure 1 of the St. Cyr patent [R. 989] wherein the patent teaches the insertion between a carburetor 2 and the engine 3 of certain corrugated and rolled “fine metal gauze.” So used the purpose of the device is to catch any droplets of gasoline fuel carried along with the air from the carburetor 2 and retain these in contact with the air until they can be evaporated [see testimony of Appellants’ expert Russell, R. 366, 367]. The statement in Appellants’ brief (p. 50) that the “St. Cyr device was obviously intended to be used in the air intake of the carburetor * * *” is clearly contrary to the expressed disclosure of the patent in suit or all of the evidence in the record. It is not to be used in the intake to the carburetor but rather on the exit side of the carburetor and between it and the manifold [R. 370].

Physically the construction of the St. Cyr device differs radically from the patent in suit. While the patent in

suit is a panel formed of a plurality of sheets of crimped mesh screening members (Claim 5) the device of the St. Cyr patent consists of a single sheet of fine wire gauze having corrugations. This single sheet is rolled up to form the filter. The single sheets employed before they are rolled up are either of the form shown in Figure 5 or Figure 8 of the St. Cyr patent [R. 989]. The corrugations of these sheets have no angle or bend therein and are widely spaced apart. As illustrated in Figures 5 and 8 these corrugations are totally devoid of any angle. Appellants, while conceding that the single sheet of corrugated fine wire gauze of the St. Cyr patent has straight corrugations without an angle, asserts that by the process of winding the sheets they are given a gradual change in direction and for this purpose introduced two exhibits of wound corrugated wire [Deft. Exs. V and W].

This is the same contention that was made, as we have shown, in connection with the spirally wound screen used in the Farr '480 patent and as we have shown in connection with that patent, while winding of the strip may induce a slight spiral angle in the valleys of the corrugations, the passages are substantially straight as proven by Plaintiff's Exhibit 26 [R. 975] which is an actual photograph of the commercial production of the Farr Company's humidifier screens with straight crimps or wound spirals. As clearly shown from that exhibit the passages are substantially straight [R. 975].

The material used in the St. Cyr patent is said to be "a strip of fine metal gauze." On direct examination Appellants' expert Russell testified that the words "wire gauze" included any wire screen between 14 and 200 mesh [R. 372]. On cross-examination he was interrogated

with respect to materials employed in the carburetor art and then testified that such material might be 60 or 70 mesh:

“The Court: It is a very fine mesh?

The Witness: Quite fine, sir.” [R. 471.]

The word “gauze” is derived from the textile industry meaning something of very fine construction and it is clear that the St. Cyr device was made out of such a fine mesh material that if coated with oil the oil would fill the openings of the gauze so as to present a solid wall [R. 740, 741]. As pointed out hereafter more specifically under the Niestle (French) patent, that patent also refers to fine gauze and that patent directly teaches that when coated with oil all of the openings in the screen are closed by the oil [R. 459]. While the patent in suit does not specify any size for the mesh of the wire screen employed it does very clearly bring out that after oiling and being placed in use the openings of the screen wire are open for the passage of air and this is made an element of the claims. For example, Claim 4 in defining “mesh members” requires that

“* * * the medium may flow through the mesh of said members.”

If an attempt were made to use the St. Cyr device as a dust filter in place of merely as a device for mixing gasoline vapors with air as the patent teaches, it would provide solid wall passages [R. 741]. Clearly the St. Cyr patent does not employ the physical elements or mode of operation of the Farr filter panel in suit as defined in the claims in issue [R. 740, 742]. The lower court in its Memorandum Opinion clearly correctly finds that it was not an air filter panel; that it was a device

applied by fluid rather than an impingement filter; that did not have the mode of operation and could not give the performance of the filter panel in suit [Memorandum Opinion p. 820, Finding 12, R. 62]. The Findings of the lower court are in accord with those of the Patent Office Examiner and are clearly sustained by the record.

The Niestle (French) Patent: The Niestle (French) patent [Deft. Ex. B, Tab 15] discloses a filter which is not constructed in accordance with the Farr patent in suit and does not have a mode of operation similar hereto. The air filter panel of the Niestle patent is made of expanded metal sheets. In the drawing of the Niestle patent and in the major form of the device of the patent these expanded plates are solid sheets of metal. The patent does suggest, however, that "numerous modifications may be made * * * in particular, according to one embodiment the elements * * * are cut out and pressed in a metal gauze 6." [R. 1072, 1073.]

Three alleged models of the Niestle device have been introduced in evidence by defendants. These include Defendants' Exhibit DD, identified by Russell as made of 16 mesh screen [R. 466]; Exhibit LL tested by Professor Rowley, which is made of 30 mesh screen [R. 10], and Exhibit YY tested by defendants' engineer Brown made of 16 mesh screen [R. 696]. These models may be helpful to the Court to enable the Court to understand how sheets of material which are set perpendicular to the direction of flow can, by a process of expanding metal, form openings but they do not correspond to the Niestle patent with respect to the wire screen from which they are composed. The Court on examination of these models will perceive at once that they are not made out of sheets of material arranged parallel

to the intended flow of air [R. 769]. It is only by alignment of certain punched-out openings of these sheets that any passages are provided for the flow of air through the panels. When one attempts to expand screen wire to make punched-out sections the material is so flimsy (even if heavy 16-mesh wire screen is employed) that it is impossible to obtain realignment of the punched-out section of successive sheets without employing a process of soldering at each punch-out section [R. 465], and all of the alleged models of the Niestle patent introduced here are soldered together in order to maintain the punch-out sections in alignment [R. 465, 771].

The Niestle patent in describing the use of wire gauze as a substitute for solid metal plates, states both in the specification and in the claims that:

“The meshes of the metal gauze may be fine enough for the liquid, such as oil, applied thereon to fill the meshes by capillary action and form a continuous, thick film of oil * * *.” [R. 1073.]

Appellants' expert Russell was compelled to admit that the teaching of the Niestle patent was that the openings in the gauze should be small enough so that when dipped in oil they formed a solid plane.

“The Court: Does it or does it not state that the openings in the gauze should be small enough so that when dipped in oil they form a solid plate composed of the screen and the oil filling the holes?

The Witness: As described there, it does.” [R. 459.]

At the trial Professor Rowley introduced evidence of his test on the alleged model [Ex. LL] of the Niestle patent. Although Professor Rowley testified that this model was representative of the teachings of the French

patent [R. 507 and 508] this testimony, of course, came after the knowledge of the Farr patent in suit and the Appellants' P-5 filter. In making this model he used a 30-mesh screen wire [R. 510] which is a much finer wire than the 16-mesh utilized in the production of the other alleged Niestle models, Defendants' Exhibit DD or Defendants' Exhibit YY. The 30-mesh wire hardly corresponds to the requirement of the Niestle patent that wire gauze be employed. It was admitted by Rowley that in his tests the oil did not occupy the openings [R. 521]. We have previously contrasted the results of Professor Rowley's tests on this alleged Niestle Model, Defendants' Exhibit MM [R. 1076] with the similar tests performed by Professor Rowley on the Farr patent in suit and on Appellants' P-5 filter. A mere inspection of this exhibit shows the extreme high pressure drop and extremely rapid rate of pressure rise to dust load. Exhibit YY departs even farther from the Niestle patent in the use of the very open 16-mesh screen wire, the openings of which were not closed during test. None of the tests performed by Appellants on the alleged Niestle models indicate any performance similar to that of the patent in suit. The test of Exhibit DD gave a rapidly rising pressure drop. The test of Exhibit YY gives a poor filtering efficiency.

It requires but a simple comparison of any one of the claims of the patent in suit with the Niestle patent to demonstrate that this patent does not anticipate the claims in suit. Physically the Niestle device is entirely different. The claims call for sheets of mesh material of wire screen *parallel* to the direction of air flow. The Niestle sheets are perpendicular. The claims call for the passages being formed by these parallel sheets or

the corrugations therein, whereas the only passages formed in the Niestle device are by punched-out sections. There is an enormous manufacturing problem presented as evidenced by the necessity of soldering each sheet to adjacent sheets [R. 771, 772].

It was these physical differences which the lower court had in mind in its Memorandum Opinion relative to the Niestle patent as follows:

"I do not just mean cleaning air but all of the things that must be taken into consideration in the manufacture and sale and use and cost and maintenance and upkeep of air filters." [R. 821.]

The Proceedings on the Farr Application Contained No Abandonment or Estoppel but Instead Indicated an Expressed Intent of Both Farr and the Patent Office to Cover Filters Omitting Flat Screens.

The Farr patent in suit issued on an application filed April 4, 1940, Serial No. 327,833 filed as a continuation of an earlier and then copending application Serial No. 285,904 filed July 22, 1939. This earlier and copending application disclosed forms of the Farr filter panel which included no flat wire mesh screen. Appellants contend that because of the filing of the continuation application for the patent in suit without expressly disclosing air filter panels omitting the flat screens, and because of the rejection of Claim 6 of the earlier application, the patentee Farr either abandoned or is now estopped to have Claims 4, 5, 7 and 8 in suit construed so as to include filter panels omitting a flat screen.

To the contrary there is no abandonment or estoppel created merely because the inventor had filed his original

application showing several forms of his invention and then later substitutes therefor a continuation application in which he illustrates only the best form of his invention. The scope of an application is determined not by the drawings of the application but by the claims of the application. When the continuation application was filed the claims of that application demonstrated that Farr had no intention of abandoning those forms of his invention which omitted the flat screen and the subsequent prosecution of his continuation application demonstrates that Farr intended to secure and the Patent Office Examiner intended to grant claims of a broad enough scope so as to include filter panels such as the Air-Maze accused P-5 which employed no flat wire screen.

The original Farr application Serial No. 285,904 [Pltf. Ex. 1-B, R. 939-955] disclosed in Figures 1 to 4 of that application an air filter panel composed of crimped or corrugated wire screen. There were no flat wire screens employed and the corrugations of alternate crimps inclined in opposite directions, as more particularly illustrated in Figure 3. There was no bend in the corrugations and the passages formed by the corrugations did not change in direction. In Figures 5, 6 and 7 of Application Serial No. 285,904 there is shown a form of the invention in which between each bend of corrugated wire screens there is placed an additional strip of flat screen, and in Figures 8 and 9 of the application there is shown a form of filter in which the corrugations or crimps of the wire screen were angled, *i. e.*, were made in the same herring-bone shape as in the patent in suit. While the description of Figures 9 and 10 of the Application Serial No. 285,904 did not describe directly whether or not any flat wire

strips are to be employed between the corrugated strips the obvious inference from the previous disclosure is that the herringbone type of crimp or corrugated strip could be employed either as indicated in Figures 1 to 4 without employing any flat wire screen or as shown in Figures 5, 6 and 7 where the flat wire screens were employed.

Comparing the disclosure of Application Serial No. 285,904 with Appellant's P-5 filter it will be seen that all appellants have done in constructing this P-5 filter is to follow the disclosure of Application Serial No. 285,904 as to the omission of the flat wire screen and utilized a crimped wire screen having two bends rather than one. The proceedings on the continuation application Serial No. 327,833 demonstrates conclusively that this form of device was intended to be covered by the Farr patent in suit. Examination of the patent in suit will show that it contains Claims 1, 2, 3 and 6 (not here in suit) which claims are in specific language limited to a filter panel composed of alternate layers of "crimped and uncrimped mesh members packed together." This language is obviously intended to confine these claims to that form of the Farr filter in which between each alternate layer of crimped or corrugated wire screen there is placed the uncrimped or flat wire screen. The claims of the patent in suit, however, Claims 4, 5, 7 and 8, refer only to the employment of corrugated or crimped wire screens.

From the outset of the proceedings on the filing of this continuation application up until the grant of the Letters Patent in suit the proceedings show that Farr was at all times cognizant of the fact that his invention could be embodied in either a filter omitting the flat screens or one using the flat wire screen. As filed the

continuation application contains the following broad claim:

“8. An air filter panel composed of wire mesh screen members, said screen members being arranged to permit the flow of air through the air panel along lines parallel to the planes of the screen of said members, said members being shaped to provide abruptly changing lines for air flow through the panel.”

There certainly is no basis for asserting at present that flat wire screen is intended to be an element of this claim while at the same time the application contained more narrow claims, such as 6 and 7, referring to only alternate screen members being crimped.

At no time during the prosecution of this application did the Patent Office make any distinction in its action as to the patentability of the Farr claims as to whether or not said claims were limited to the flat wire screen. No claim was cancelled during the prosecution of the Farr application until the supplemental amendment appearing in the record at pages 915-924. This amendment was filed after an oral interview by the Examiner and the inventor's son Richard S. Farr and Appellee's expert Duncan [R. 106, 107]. This amendment included the claims in suit which as we have indicated contain Claims 1, 2, 3 and 6 as clearly limited to the flat wire screens and Claims 4, 5, 7 and 8 not so limited. At the interview and in the supplemental amendment in which the previous claims were cancelled it was pointed out to the Examiner that two sets of claims were being prosecuted, one limited to mesh screen members and the other not. Thus, for example, the supplemental amendment reads:

“Considering more particularly the claims now under consideration, claims 18 to 20 are specific to a

filtering panel having alternate crimped and uncrimped mesh members packed together to subdivide the panel into a multiplicity of passages extending through the panel with the passages changing in direction. Claims 21 and 22 are also specific to the angular relationship or change in direction of the passages *but are somewhat more generic in their recitation of the structure of the mesh screen members which compose the filter panel.*" [R. 923.]

Clearly, therefore, Farr never abandoned his efforts to secure claims which were not limited to flat wire screen and the Patent Office Examiner intended to grant claims of such scope.

Equally untenable is the position asserted by Appellants that by cancelling Claim 6 in Application Serial No. 285,904 Farr either abandoned or is estopped to claim a filter panel which omits the flat wire screen. Claim 6 of the original application is not comparable in scope with any of Claims 4, 5, 7 and 8 of the patent in suit. It is not correct to say that said Claim 6 is either broader or narrower than the patent claims. This Claim 6 calls for, among other things, "a series of laminated, intersticed metal strips," for "said strips being laid with said convolutions in diagonally opposite directions," and for "unrestricted diagonally extending passage-ways." Clearly this claim is totally inadequate to define many essential elements of the Farr filter panel. It does not recite the use (as is recited in all the claims of the patent in suit) of "mesh screen members," whereas the record here demonstrates the mode of operation and performance of the Farr filter panel is dependent on the use of mesh screening members. Claim 6 refers to "metal strips." It does not define (as all of the claims in suit define) that the

members, whether strips or wire screen, are positioned in the panel "extending in the general direction of the intended flow through the panel of medium to be filtered," whereas the record here demonstrates that this feature is essential to the Farr panel. It does not recite that the filter panel is provided with passages "the walls of which passages are composed of such mesh members" as recited in the claims in suit. It does not recite that the passages change in direction or are abruptly angled, as specified in the claims in suit, and it does not recite that the strips of material or wire mesh, are arranged so as to "effect a multiple subdivision of the panel" which is an essential element of all Claims 4, 5, 7 and 8 in suit. Thus in all of the respects above mentioned Claim 6 is broader than any of Claims 4, 5, 7 or 8 in suit, whereas in other respects Claim 6 is narrowed than any of the claims in suit.

Claim 6 of Application Serial No. 285,904 calls for strips being laid with their convolutions in "diagonally opposite directions," a practice which may be employed in some forms of the Farr filter panel but is not essential to the invention.

Thus Claim 6 so relied upon by Appellants was totally inadequate to define the invention of the Farr filter panel and was cancelled and other claims substituted therefor not with the intention, as asserted by Appellants, of abandoning the claims due to the omission of the flat wire screen (to which there is no reference in Claim 6) but merely because such claim was totally inadequate to express the invention.

In construing Claims 4, 5, 7 and 8 in suit the lower Court clearly did not construe those claims in such a way

as to make them coextensive with this cancelled Claim 6. Claims 4, 5, 7 and 8 are clearly, in many respects, more limited than this Claim 6 of Application 285,904. The accused P-5 filter panel follows all the specific limitations of Claims 4, 5, 7 and 8 and not the language of this Claim 6 of Application Serial No. 285,904. The accused P-5 filter panel was made using mesh screen wire as provided in the Claims 4, 5, 7 and 8 in suit and not the "metal strips" stated in Claim 6 of Application 285,904. The Air-Maze P-5 filter panel used crimped wire sheets, the crimp providing the "multiple subdivision of the panels." The Air-Maze P-5 filter panel includes passages "the walls of which passages are composed of mesh members" not recited in said Claim 6. The Air-Maze P-5 panels had passages changing in direction or angularly disposed as provided in the claims in suit and do not have the unrestricted diagonal passages to which Claim 6 is limited. Thus clearly Claim 6 of Application Serial No. 285,904 does not show any such an abandonment or create any such estoppel as contended by Appellants.

Appellants' P-5 Filter Is Substantially Identical With the Filter Panels of the Farr Patent in Suit.

The filter panel disclosed in the Farr patent in suit and Appellants' P-5 filter are essentially basically the same. Appellants rely first on the fact that the P-5 panel omits the flat screens. This idea was Farr's not Air-Maze's and consistently throughout the prosecution of the Farr patent in suit Farr intended to cover filters without the flat screens. Appellants next urge that in the patent in suit the corrugations of all the screens are parallel, whereas in the P-5 filter panel the alternate corru-

gated screens are laid in opposite directions. Here again Appellants are anticipated by Farr, who fully appreciated that the screens could be laid either way, and the evidence establishes that no difference in mode of operation or performance is occasioned thereby. Appellants further urge that in the Farr filter panel there are individual passages running from the front to the back of the filter. Identical passages are provided in the P-5 filter. The passages of the patent in suit are merely the valleys provided by the crimps. Identical valleys are in the P-5 filter panel. Air-Maze has recognized the existence of such passages. These passages will be found identified in the Air-Maze catalog on the P-5 filter [Pltf. Ex. 4]. On page 2 of that catalog will be found the following sentence:

“Air enters crimped layers of galvanized wire mesh at 180°. ‘Z’ shaped channels provide large areas for dirt storage with minimum impedance to air flow.”

Below this statement there is a perspective view of a section of one of the Air-Maze crimped sheets identified by an arrow in the passages and the statement in the catalog reads:

“Arrows show how more than a million tiny openings plus *three changes of air flow*, remove dirt from air stream and deposit it evenly on viscous-coated wire baffles.” (Italics from catalog.)

Appellants make many contentions with regard to alleged difference in structure between their P-5 filter panels and the filter panel of the Farr patent in suit. Actually they are all variations of the same theory that the patent in suit must be limited to a filter having a flat screen. There is no question but that the Air-

Maze P-5 filter panel is an exact copy of the Farr invention. A great deal of time was spent at the trial by Appellants merely to prove the fact that in the Air-Maze P-5 panel, because of the omission of the flat screen, the air passage of the valley of one crimp crosses over and is in communication with a number of air passages of an adjoining wire screen. This, of course, is equally true in the forms of the Farr filter which omit the flat sheet, and the evidence demonstrates that there was no difference in mode of operation effected thereby or any change in the performance of the filter. The air which is within one of the valleys of the P-5 crimped sheet to pass into the valley of an adjoining sheet must change in direction [R. 241]. There is nothing in the record which would sustain any finding how any difference in mode of operation or results were obtained by the Air-Maze P-5 filter panel over that of the Farr patent in suit.

Appellants also point out the fact that in the proceedings on the Farr application the passages are referred to as "substantially triangular." The passages in the Air-Maze P-5 filter were also substantially triangular. Of course, when one triangular passage passes over another triangular passage the two passages together form a section of diamond shape. Professor Rowley testified concerning the P-5 filter:

"* * * As you start out with a triangular section near the entrance side, it runs into sort of a triangle and a rectangular section where it is enlarged. Then it comes down again to a triangular section where it is making a bend, where it comes across the trough the second time, and it alternates down between the larger sections which are made up really

of two triangular sections, at right angles to each other, and the smaller sections which are triangular.
* * *” [R. 555.]

Appellants further urge as a difference in structure that in the Farr filter panel the passages change in direction and assert there is no such change in the P-5 filter panel. This contention is answered simply by referring the Court to Exhibit 4 where in the Air-Maze catalog on page 2, the lower right-hand corner, will be found a drawing of the passages of the Air-Maze P-5 filter panel and with the statement in italics in the catalog that such panel includes “three changes of air flow.”

No attempt is made by Appellants to establish that there is any difference in function or performance between the P-5 filter panel and that of the Farr patent in suit. Principal reliance of Appellants in their argument of noninfringement is predicated upon the use in the patent claims of language calling for a “multiple subdivision of the panel in both dimensions perpendicular to the general direction of flow of medium to be filtered.” While this language does not appear in the specification to the patent, that the language is clear and definite is established in the trial by the testimony of appellants’ expert Russell [R. 360]. This language means simply that the face of the filter panel is divided both in the horizontal and vertical direction into a multiplicity of small passages and no witness at the trial testified that there was anything indefinite in this language. To provide multiple subdivision one requires only the corrugated sheets and does not require the flat sheets. The flat sheets obviously can divide up the panel only in the vertical direction. These flat sheets run only horizontally [R. 127]. The only means illustrated in the patent in suit for dividing

the air stream in the horizontal direction is the corrugations of the corrugated sheets [R. 127].

To clearly illustrate how the P-5 panel is subdivided in two dimensions Appellee's expert Duncan made a plastic cast of the medium of the P-5 filter which was then sawed into three pieces [R. 168]. The thin piece identified as Exhibit 15-A shows how the alternate corrugated screens contact each other and completely segregate the different passages from each other thereby effecting a subdivision in both dimensions [R. 169]. Appellants' expert Rowley conceded on the stand that there were about five points of contact between the crimps of one screen and the crimps of an adjacent layer [R. 539]. At such obstruction point the panel is divided in two dimensions [R. 244].

We have previously referred to the fact that the test data, including both those submitted by Professor Duncan and those submitted by Professor Rowley, show that the Air-Maze P-5 filter panel and the Farr filter panel are substantially identical with respect to efficiency and pressure drop and to change in efficiency and pressure drop with increasing dust load. In both filter panels there is substantially no difference in performance or in mode of operation [R. 173].

In its Memorandum Opinion the lower court stated:

"But essentially it seems to me, after studying the devices and seeing them here and hearing all of the expert testimony, that they are essentially and basically the same idea." [R. 822.]

The Findings of Fact 19, 20, 21, 22 and 23 of the lower court are fully sustained by the record here and lead necessarily to the conclusion that Appellants' P-5 filter panel is an infringement of the patent in suit.

ARGUMENT.

The Defense That the Farr Patent Is Invalid as an Unpatentable Combination of Old Elements.

The basis of appellants' contention that the combination of elements of the patent in suit is not patentable is the alleged failure of the elements of the patent in suit to perform any new or different function or produce any new results of unusual or surprising consequence. Appellants rely primarily on the recent decision of the Supreme Court in *Great A. & P. Tea Co. v. Supermarket Equipment Corporation* (1950), 340 U. S. 147, 95 L. Ed. 162, together with the decision in this Circuit of *Himes v. Chadwick* (1952), 199 F. 2d 100, and the decision of the Sixth Circuit in *United Specialties Co. v. Industrial Wire Cloth Products Corp.* (1951), 186 F. 2d 426. As stated in the *Great A. & P. Tea Co. v. Supermarket Case*, 340 U. S. at 151, 95 L. Ed. at 166:

“‘The mere aggregation of a number of old parts or elements which, in the aggregation, perform or produce no new or different function or operation than that theretofore performed or produced by them, is not patentable invention.’ * * * This case is wanting in any unusual or surprising consequences from the unification of the elements here concerned,
* * *”

In the *Himes v. Chadwick Case* this Court said, 199 F. 2d at 106:

“The test is whether the unification of the elements brought into the combination produces ‘unusual or surprising consequences.’ *A. & P. Tea Co. v. Supermarket*, *supra*; *Packwood v. Briggs & Stratton Corp.*, *supra*.”

The cases relied upon by Appellants are all cases where the sole novelty asserted for a combination of elements resided merely in the dimensions or number of parts which resulted in no new or different function or no new result or unusual or surprising consequences. Thus in the *Great A. & P. Case* the sole alleged novelty was "only an extension of the counter." This extension was not "mentioned in the claims, except perhaps, by a construction too strained to be consistent with the clarity required of claims * * *."

In the *Himes v. Chadwick Case* the novelty of the carton box claimed over a single prior art patent to Berkowitz resided in "extensions or flaps from each of the four sidewalls * * * as distinguished from the utilization * * * of flaps from only two sidewalls." And another prior art patent to Filmer disclosed the utilization of four flaps instead of two. This Court stated 199 F. 2d at 106:

"Thus Parks is no more than a combination of the disclosures of Berkowitz and Filmer."

This combination produced no new result of unusual or surprising consequences.

In the *United Specialties Co. Case* the sole novelty of the liquid washing type filter of the patent in suit was the extension of a baffle over the sump to reduce the oil spray. Baffles were old in the art and there was no new result of unusual or surprising consequence.

This is not a case where the Farr patent in suit depends for its novelty merely upon the change of one of the elements of an old combination without any new results or any results of unusual or surprising consequence. The Farr filter panel achieved a new and unusual

and surprising result of combining the ability to provide high efficiency in removing dust from air with a lower pressure drop than previous commercially built filters, which pressure drop does not rise as rapidly as previous filters. This was Finding 4 of the lower Court and other Findings, 10 to 14, will show that this new and surprising result was not possessed by any of the prior filters.

This new result is an entirely surprising unusual and unpredictable result. Despite the known knowledge of the art that wire screen filters, such as the Air-Maze Type A and Type B filters, gave comparatively high efficiency but rapid rise in pressure drop with dust load, and despite the knowledge in this art that other filters, such as the Detroit paper filter, gave slowly rising pressure drops but only at the expense of 7 to 10% reduction in filter efficiency, it was not known that both these advantages could be obtained in a single filter.

Not only does the combination of the Farr patent in suit exhibit new functions and new and unusual and surprising results but there is an expressed finding that this combination and the new results were not obvious from the prior art. The record is completely barren of any attempt by Appellants to establish either that there existed any prior art filters or patents disclosing a filter having both the high efficiency and low change in pressure drop with dust load of the Farr filter patent in suit, nor that there was any knowledge by those skilled in the art by which the new results of the Farr filter could have been predicted. It is one thing to hold, as in the cases relied upon by Appellants, that mere extensions of tables, multiplicity of flaps, extension of baffles, etc., with perfectly obvious results give rise to no new patentable combination. But this case is totally barren of any basis for Appellants to assert

that anything in the prior art's knowledge renders obvious the new results of the Farr filter.

See:

Williams Mfg. Co. v. United Shoe Machinery Corp. (1941), 316 U. S. 362, 86 L. Ed. 1537;

American Chain & Cable Co. v. Rochester Ropes, Inc. (C. A. 4, 1952), F. 2d, 95 U. S. P. Q. 115;

Robertson Rock Bit Co. v. Hughes Tool Co. (C. A. 5, 1949), 176 F. 2d 783;

Harris, et al. v. National Machine Works (C. A. 10, 1948), 171 F. 2d 85;

Bianchi v. Barilli (C. A. 9, 1948), 168 F. 2d 793;

Florence-Mayo Nuway Co. v. Hardy, et al. (C. A. 4, 1948), 168 F. 2d 778;

Page, et al. v. Myers (C. A. 9, 1946), 155 F. 2d 57.

These decisions establish the rule that when a new combination or arrangement of known elements produce a new and unexpected result, a patentable combination arises and it is not necessary that this new and unexpected result be new in kind, it is enough that it is new in degree if such an improvement in degree was an unpredictable and unexpected result.

The leading case on this point is *Webster Loom Company v. Higgins, et al.* (1882), 105 U. S. 580, 26 L. Ed. 1177, where the new and unexpected result of the combination was merely a loom capable of producing fifty yards a day where the prior device had been able to

produce only forty yards. In that case it is stated, 26 L. Ed. at 1181:

“It may be laid down as a general rule, though perhaps not an invariable one, that if a new combination and arrangement of known elements produce a new and beneficial result, never attained before, it is evidence of invention. It was, certainly, a new and useful result to make a loom produce fifty yards a day, when it never before had produced more than forty; and we think that the combination of elements by which this was effected, even if those elements were separately known before, was invention sufficient to form the basis of a patent.” (105 U. S. at 591 cited by this Court of Appeals in *Bianchi v. Barili*, 168 Fed. 2d 793 in sustaining the patent in suit as a combination of old elements merely because it produced raviola with greater rapidity.)

Similarly, the Supreme Court in the comparatively recent case of *Williams Mfg. Co. v. United Shoe Machinery Corp.* (1941), 316 U. S. 362, 86 L. Ed. 1537, sustained as patentable a combination of old elements which produced the new result of permitting the machine to be adjusted in advance so that it would operate in a wide range of different size shoes, stating, 316 U. S. at 367, 86 L. Ed. 1542:

“These findings are to the effect that the new combinations, while they involve old mechanical constructions, combine these in a new way, so as to produce an improved result. These are findings of fact despite the petitioner’s apparent contention to the contrary, and we will not disturb such concurrent findings where, as here, there is evidence to support them.”

The Court of Appeals for the Fourth Circuit in a decision distinguishing the *Great A. & P. Case* sustained a patent on a combination of old elements producing an unexpected superiority residing merely in the ease of more ready handling and longer life, stating:

“It is familiar law that a new combination of old elements, which produces a new result in a manner not obvious to those skilled in the art, is patentable.

(Citing cases.)”

American Chain & Cable Co. v. Rochester Ropes, Inc. (1952), 95 U. S. P. Q. 116, 117.

Other recent cases sustaining patents on combinations which accomplished not necessarily a new result but an old result in a more factual, economical or efficient way are:

Harris, et al. v. National Machine Works (C. A. 10, 1948), 171 F. 2d 85;

Florence-Mayo NuWay Co. v. Hardy, et al. (C. A. 4, 1948), 168 F. 2d 778;

Page, et al. v. Myers (C. A. 9, 1946), 155 F. 2d 57;

Bianchi v. Barili (C. A. 9, 1948), 168 F. 2d 793.

Appellants make no attempt to establish that there exists any prior art having the combined characteristics of high efficiency and low pressure drop with the slow rise in pressure drop. Notwithstanding the findings of the lower court that this constituted a new result, Appellants' brief merely lists the elements of Claim 7 in suit and the specific prior art patents which are alleged to disclose such elements separately. This in no way refutes the findings of fact of the lower court that the patent in suit rep-

resents a new combination. Appellants' process of merely culling from different prior art patents elements of the patent in suit has been repeatedly held to be insufficient to show that a patentable combination is not present.

"It will not do, as appellant tries to do, to cull from one and another of the prior patents elements of the combinations in suit. They must show not that some of the elements are present in the prior patents but that the combination is. The evidence as a whole is not sufficient to overcome the presumption attending their granting."

Robertson Rock Bit Co. v. Hughes Tool Co. (C. A. 5, 1949), 176 F. 2d 783, at 789.

Appellants' Contention That the Patent in Suit May Be Shown to Be Invalid by the Substitution in the Detroit Filter Made of Paper of the Wire Screen of the Greene Patent.

Appellants assert that it would not amount to invention to use wire screen in the Detroit air filter made of paper or cardboard. Appellants assert this is a mere substitution of one well known material for another. As we have shown the issue thus raised is not merely the substitution of one well known material for another; the substitution of material would result merely, for example, in making the Detroit filter out of metal plates rather than paper plates. The use of wire screen is a change not only of material but of structure and results in a device having open mesh walls which leads to an entirely different mode of operation. In the Detroit air filter there is no flow of air through the paper or cardboard walls, whereas in the patent in suit the major flow when the panel is clean is through the mesh of the wire screen with a progressive

increase in the flow of the air down the passages as the openings of the screen become loaded with dust.

Even treating the issue as merely the case of substitution of materials, the decisions clearly demonstrate that the patent in suit must be sustained. The leading case on the law of the patentability of change of materials is the early 1875 case of *Smith v. The Goodyear Dental Vulcanite Company, et al.*, 93 U. S. 486, 23 L. Ed. 952. In that case Goodyear had obtained a patent on the use of hard rubber, a recently discovered compound of known characteristics, as a base for artificial teeth. Various materials had been used for this purpose before but nevertheless the Supreme Court held the patent valid stating that the patentee had done more than merely use "hard rubber to perform the functions that had been performed by other materials, such as gold, silver, tin, platinum or gutta-percha." The Court stated that the result was a new product "differing from all that had preceded it, not merely in degree of usefulness and excellence, but differing in kind, having new uses and properties." (23 L. Ed. at 954.)

The latest expression of law on this subject by the Supreme Court is the recent 1944 decision in *Goodyear Tire & Rubber Company, Inc., et al. v. Ray-O-Vac Company*, 321 U. S. 275, 88 L. Ed. 721. Syllabus 4 in the L. Ed. reads:

"The substitution for a paper casing, in dry cells for flashlight batteries, of a strong metal sheath insulated from both terminals, thereby solving problems of leakage and swelling, involves invention."

In the decision the Court stated:

"Viewed after the event, the means Anthony adopted seem simple and such as should have been

obvious to those who worked in the field, but this is not enough to negative invention. * * * Accepting, as we do, the findings below, we hold the patent valid and infringed.” (321 U. S. at 279.)

If the substitution in a dry battery of a metal case for a paper case can constitute a patentable invention it is difficult to see how in the face of the evidence presented in this record the patent in suit can be held invalid on the ground that it is anticipated by the change of screen wire for paper in the Detroit air filter.

Of particular interest is the case of *Smith Mfg. Co. v. Samson-United Corporation* (C. A. 2, 1942), 130 F. 2d 525. In this case the Second Circuit sustained a patent on an electric fan having flexible blades of a certain shape. The shape of such blades were such that they would not droop when the fan was not in motion (a better sales feature) but they were sufficiently flexible so they would yield when striking any object (a safety measure). The patent was sustained notwithstanding that the prior art showed the use of soft rubber fan blades (which would droop when not in motion) and also fan blades made of metal of like shape to those of the patent in suit.

The leading case in this court is *Oliver-Sherwood Co., et al. v. Patterson-Ballagh Corporation*, 95 F. 2d 70. In that case Sherwood Patent No. 1,416,988 covered the use of soft rubber on bearings and was held valid although the prior art had shown the use of hard rubber bearings.

It is a question of fact to be determined in each patent case whether or not a substitution of a new material for an old one is patentable.

“There is, however, no rule of law that the substitution of a new material for an old is not patentable.

The question is always whether the alteration requires invention or merely the exercise of mechanical skill and judgment.

Remington Rand Business Service, Inc. v. Acme Card System Co. (C. A. 4, 1934), 71 F. 2d 628, 632;

See also:

Lincoln Stores, Inc. v. Nashua Mfg. Co. (C. A. 1), 157 F. 2d 154;

Grant Paper Box Co. v. Russell Box Co. (C. A. 1, 1946), 154 F. 2d 729;

United Shoe Machinery Corp. v. E. H. Ferree Co., et al. (C. A. 2, 1933), 64 F. 2d 101;

Allen Filter Co. v. Star Metal Mfg. Co., et al. (C. A. 3, 1930), 40 F. 2d 252;

Smokador Mfg. Co., Inc. v. Tubular Products Co. (C. A. 2, 1929), 31 F. 2d 255;

Akme Flue, Inc. v. Aluminite Flexible Flue Cap Co. (C. A. 2, 1928), 27 F. 2d 736;

Yablick v. Protecto Safety Appliance Corporation (C. A. 3, 1927), 21 F. 2d 885;

Crawford, et al. v. Thomas E. Wilson & Co. (C. A. 2, 1924), 297 Fed. 617.

The findings of fact of the lower court were certainly fully sustained in the record. There is no question but that the filter panel of the patent in suit possesses a different mode of operation than the Detroit filter panel. There is no question but that it achieves an unexpected advantage over the Detroit paper filter admittedly being 7% to 10% more efficient. There is no question but that

air filters are sold to highly technical people who have given side-by-side tests of paper filters and filters made of wire screen without the filter panel of the patent in suit being suggested thereby. Under the foregoing authorities it is submitted the lower court correctly applied the proper test as to what constituted a patentable invention, heard the evidence and made his findings supported by not only the substantial evidence but all the evidence.

This same issue was raised before the Patent Office Examiner in the prosecution of the Farr patent in suit. There is no sound basis for Appellants' contention that the patent in suit can be held invalid on the Detroit patent.

Appellants' Defenses of Alleged Abandonment and Estoppel.

The contention of Appellants that by filing the continuation application Serial No. 327,833 for the earlier application Serial No. 285,904, Farr abandoned all forms of his air filter which were not specifically shown in the drawings of the continuation application, is totally unsound in fact and law. The patent statutes do not require that an inventor illustrate in his application all the different forms of his invention. All that the patent statutes require is that the inventor show the best form of his invention. The specific language of the applicable statute is as follows:

“* * * he shall explain the principle thereof, and the best mode in which he has contemplated applying that principle, so as to distinguish from other inventions * * *.”

Revised Statutes, Section 4888.

There is no question but that the inventor Farr considered the form of the filter panel shown in the Farr patent in suit to be superior to any of the other forms illustrated in the early application—this is the only form appellee has ever sold. In filing a new application illustrating only this form of his invention Farr did not intend to and did not abandon any of the other forms. An invention is not abandoned even if an application for that invention is abandoned. As stated in *Corpus Juris*:

“A party may abandon a particular application for a patent without abandoning the intent to secure a patent at some time and therefore without abandoning the invention claimed therein. He may file a subsequent application and secure a patent.”

48 *Corpus Juris* 111.

A case directly in point is that of *Research and Development Corporation of Illinois v. Chase, et al.* (C. A. 7, 1937), 88 F. 2d 353, 355. In that case the Court squarely held that claims in a patent were not to be deemed limited merely because forms of the invention had been described in earlier abandoned applications but not in the continuation application on which the patent issued.

To the same effect is *Overman Cushion Tire Co. Inc. v. Goodyear Tire & Rubber Co. Inc.* (C. A. 2, 1930), 40 F. 2d 460, 462.

Clearly the mere fact that one form of the Farr filter was shown in the earlier application and was not shown specifically in the continuation application creates no aban-

donment. The proper course to determine Farr's intention in filing the continuation application is to examine the claims in that continuation application and the proceedings before the Patent Office. Since these clearly demonstrate that both Farr and the Patent Office intended that Claims 4, 5, 7 and 8 should not be limited to the flat wire screen, no abandonment as alleged by Appellants is created. Appellants are actually trying to read into Claims 4, 5, 7 and 8 a limitation not contained therein but contained in Claims 1, 2, 3 and 6 which are not in suit. As appears hereafter this procedure is clearly improper. There is no basis whatsoever for Appellants' contention of abandonment.

Appellants' contention that because Claim 6 of the original application No. 285,904 was not retained in the continuation application No. 327,833 an estoppel was created sufficient to prevent Claims 4, 5, 7 and 8 of the patent in suit from including the accused P-5 filter panel is without sound basis. It is not true as asserted in Appellants' brief that Claims 4, 5, 7 and 8 of the patent in suit are broader than the claims of application 285,904 and we have established herein at pages 50-51 that Claims 4, 5, 7 and 8 are in numerous respects narrower than Claim 6. We have shown that such Claim 6 was indefinite and improperly defined the Farr filter.

Even if, as asserted by Appellants, Claims 4, 5, 7 and 8 were broader than the said Claim 6 of application 285,904 it would be immaterial. It is well settled that the scope of a broad patent claim is not effected merely because the rejection of a narrow claim is followed by the

allowance of such broader claim. As stated in the leading case of *Smith v. Snow* (1934), 294 U. S. 1, 16, 79 L. Ed. 721, 730:

“It is of no moment that in the course of the proceedings in the Patent Office the rejection of narrow claims was followed by the allowance of the broader Claim 1. *Westinghouse Electric & Mfg. Co. v. Condit Electrical Mfg. Co.*, 194 F. 427, 430 (C. C. A. 2d).”

This rule is not at all disturbed by the case of *Schriber-Schroth Co. v. Cleveland Trust Co.* (1940), 311 U. S. 211, 85 L. Ed. 132, relied upon by Appellants. Such case only establishes that as to *validity* where a broad claim is anticipated by the prior art it may not be saved by reading into such broad claim the limitations in narrow claims which were deliberately cancelled in the Patent Office. No such question is here presented. The question here concerns the effect of the Patent Office proceedings on the issue of infringement, not on the question of validity. Moreover, Appellants, not Appellees, are attempting to read into the claims in suit limitations found in previously cancelled claims. Both *Smith v. Snow* and the *Schriber-Schroth* cases hold that this cannot be done.

Actually Claims 4, 5, 7 and 8 of the patent in suit are in many respects narrower than Claim 6 of application 285,904 and the law is well settled that it is immaterial that a broad claim is cancelled where it is followed by the allowance of a narrow claim when the narrow claim also fully covers the defendants' device. Here Appellants' device is unquestionably within the scope of all of the

limitations in Claims 4, 5, 7 and 8 but, as we have pointed out, not within the scope of Claim 6 of Application 285,904. There is, therefore, no basis whatever for any estoppel.

“That it was originally claimed in broader form, and that the claims were subsequently narrowed, lends no aid or support to appellant because it infringes the narrower claims. In such event there can be no file wrapper estoppel because appellant uses the process of the patent even though the cancelled claims broadly described the process.”

Ceramic Process Co. v. General Porcelain Enameling & Manufacturing Co. (C.A. 7, 1942), 129 F. 2d 803, 806.

The doctrine of file wrapper estoppel is merely that a patentee may not by construction or by resort to the doctrine of equivalents interpret any claim which he succeeded in having allowed so that it will be coextensive in scope with a rejected claim. (*Musher Foundation, Inc. v. Alba Trading Co., Inc.* (C. A. 2, 1945), 150 F. 2d 885, 888; *Southern Textile Machinery Co. v. United Hosiery Mills Corporation* (C. A. 6, 1929), 33 F. 2d 862, 865.) No attempt here has been made to construe Claims 4, 5, 7 and 8 so as to cover the same subject matter as Claim 6. Claims 4, 5, 7 and 8 in referring to mesh members, to passages walled by screen wire, the angle of the corrugations, and the progressive loading, are in all these respects more limited than Claim 6 of application 285,904 and all such features are clearly embodied and utilized in the Air-Maze P-5 filter panel.

The P-5 Filter Panel Infringes the Farr Patent.

We have established that the P-5 filter panel possesses every element of Claims 4, 5, 7 and 8 of the patent in suit and that the P-5 filter panel includes the same mode of operation and produces results substantially identical with the filter panel specifically disclosed in the patent in suit. Appellants' P-5 filter panel differs from the panel which is specifically described in the patent in suit only in the omission of the flat wire screen and in the adding of an additional angle in the crimp of the sheet. To read into Claims 4, 5, 7 and 8 of the patent, the flat wire screen, would be to impose a limitation on those claims which we have established from the proceedings on application No. 327,833 was not intended by either Farr or the Patent Office. Throughout the prosecution of the Farr application, Farr fully appreciated that his invention could be embodied either in filter panels using flat screens or those omitting the same and he deliberately and continuously sought claims such as Claims 4, 5, 7 and 8 here in suit which are not limited to the flat screen, as well as Claims 1, 2, 3 and 6 which are limited to the flat screens.

"When we are interpreting a series of claims, a limitation not present in one must not be implied, when the same limitation appears in later claims in the series. (Citing cases.)"

Western States Mach. Co. v. S. S. Hepworth Co.
(C.A. 2, 1945), 147 F. 2d 345, 350.

"* * * These combinations are not to be limited by writing into them an element contained in combinations not in suit. *Los Angeles Art Organ Co. v. Aeolian Co.* (C.C.A. 9), 143 F. 880, 885."

Reinharts, Inc. v. Caterpillar Tractor Co. (C.A. 9, 1936), 85 F. 2d 628 at 633.

See, also:

Symington Company v. National Malleable Castings Co., et al. (1919), 250 U. S. 383, 63 L. ed. 1045;

Electric Machinery Manufacturing Co. v. General Electric Co. (C.A. 2, 1937), 88 F. 2d 11.

The mere omission from the P-5 filter panel of the wire screen is not material since the flat wire screens are not an element of Claims 4, 5, 7 and 8 in suit and since the P-5 filter panel includes the substance of the Farr invention. Infringement is therefore established.

“‘The mere fact that there is an addition, or the mere fact that there is an omission, does not enable you to take the substance of the plaintiff’s patent. The question is, not whether the addition is material, or whether the omission is material, but whether what has been taken is the substance of the invention.’”

Stebler v. Riverside Heights Orange Growers’ Assn. (C. A. 9, 1913), 205 Fed. 735, 739.

Appellants’ P-5 filter panel is a substantial copy of the patent in suit with only such variations as do not change the substance of the panel, its mode of operation or its performance. It clearly constitutes an infringement.

“There is a substantial identity, constituting infringement, where a device is a copy of the thing described by the patentee, ‘either without variation, or with such variations as are consistent with its being in substance the same thing.’ *Burr v. Duryee*, 1 Wall, 531, 573, 17 L. ed. 650, 658.”

Sanitary Refrigerator Company v. Winters (1929), 280 U. S. 30, 41, 42, 74 L. Ed. 147, 156.

The Supreme Court of the United States in the recent case of *Graver Tank & Manufacturing Company, Inc. v. Linde Air Products Company* (1949), 339 U. S. 605, 94 L. Ed. 1097, has expressly condemned the construction of patents so as to limit the same to such literal detail of the patented device as would permit a copyist, who has made merely unimportant and insubstantial changes and substitutions which have added nothing to the device, to escape the scope of the patent. In this case the Supreme Court stated:

“But courts have also recognized that to permit imitation of a patented invention which does not copy every literal detail would be to convert the protection of the patent grant into a hollow and useless thing.”

And see:

Chicago Pneumatic Tool Co. v. Hughes Tool Co. (1938), 305 U. S. 643, 83 L. Ed. 415 (rehears. den. 305 U. S. 673, 83 L. Ed. 436).

“‘Rarely do we find an example of what might be called perfect infringement. No patent infringer would be so silly as to make and vend a device similar in every minute detail to a patent. Infringement connotes, between the patent and the accused device, merely correspondence as to the substantial, dominate and essential elements. Any other view would make of a patent a foolish and fatuous thing.’”

Bianchi v. Barili (C. A. 9, 1948), 168 F. 2d 793, 800.

To permit the Appellants, who have clearly employed every element of Claims 4, 5, 7 and 8 of the patent in

suit and made in fact a deliberate copy of the Farr filter panel, to escape the charge of infringement would be a clear violation of the rules for determination of infringement in patent cases as thus laid down not only in the recent decisions of the Supreme Court but by this Court.

Appellants' Contention That the Claims Are Invalid for Failure to Comply With 35 U. S. C. A. Sec. 33.

Appellants contend that the claims are invalid as indefinite and functional. Appellants rely on such cases as *General Electric Co. v. Wabash Appliance Corp.* (1937), 304 U. S. 364, 82 L. Ed. 1402, as holding invalid claims where the sole novelty of the invention was defined in purely functional language. The short answer to this contention is that the patent in suit covers a novel combination rather than the novelty of any particular element. (*Faulkner v. Gibbs*, 338 U. S. 267, 94 L. Ed. 62.) Appellants point to the clause of the claims referring to the multiple subdivision of the panel and assert this to be the only point of novelty, yet filter panels having multiple subdivisions in two dimensions are old in the art as set forth in Appellants' Brief, page 30. Furthermore, the language in question is not functional and indefinite. Whether or not a panel is divided horizontally and vertically is a physical feature readily apparent from an inspection of the face of any filter panel. There was no testimony at the trial that this language is indefinite and Appellants' expert conceded that it was readily un-

derstandable to an engineer [R. 360]. The multiple subdivision of the Farr filter panel results from the fact that mesh wire screens are set parallel to the direction of air flow and corrugated. The claims recite specifically the presence of mesh members set parallel to the direction of air flow and Claim 5 even specifically refers to the crimping of these sheets. The claims do not cover any air filter panel with multiple subdivisions in the horizontal and vertical directions but do cover such a panel in which the mesh members or wire screens are set parallel to the direction of flow and crimped as shown and described in the patent in suit. Appellants' infringing P-5 filter panels have employed this specific means for multiple subdividing the panels. There is no rational foundation for any contention that the claims in suit are indefinite or functional. The *General Electric Case* holds:

“A limited use of terms of effect or result, which accurately define the essential qualities of a product to one skilled in the art, may in some instances be permissible and even desirable, but a characteristic essential to novelty may not be distinguished from the old art solely by its tendency to remedy the problems in the art met by the patent.”

304 U. S. 364, 373, 82 L. Ed. 1402, 1407.

Clearly the claims of the patent in suit are not within the rule of this case. When the claims are considered as a whole and read in the light of the specification they are entirely clear and definite. The cases relied upon by Appellants each recognize that their doctrine is limited

only to patents where the claims cannot be made definite by referring to the specification.

“Respondent urges that the claims must be read in the light of the patent specification, and that as so read they are sufficiently definite. Assuming the propriety of this method of construction, *cf.*, *General Electric Co. v. Wabash Appliance Corp.*, *supra* (304 U. S. at 373-375, 82 L. ed. 1407, 1408, 58 S. Ct. 899), it does not have the effect claimed, for the description in the specification is itself almost entirely in terms of function.”

United Carbon Co. v. Binney & Smith Co. (1942), 317 U. S. 228, 234, 87 L. Ed. 232, 236.

The claims of the patent in suit when fairly construed in the light of the specification are clear and definite. The following cases will be found to fully support the validity of the patent in suit. Each sets forth that a patent should not be stricken down for uncertainty or indefiniteness when a fair reading of the specification and claims will protect the invention:

Minnesota Mining & Mfg. Co. v. International Plastic Corp. (C. A. 7, 1947), 159 F. 2d 554;

Paul E. Hawkinson Co. v. Wilcoxon (C. A. 6, 1945), 149 F. 2d 471;

Research Products Co. v. Tretolite Co., et al. (C. A. 9, 1939), 106 F. 2d 530;

Carnegie Steel Company v. Cambria Iron Company (1902), 185 U. S. 403, 46 L. Ed. 968;

Webster Loom Co. v. Higgins (1882), 105 U. S. 580, 26 L. Ed. 1177,

The claims in suit when considered as a whole and read in the light of the specification are directed to a filter panel made out of crimped or corrugated wire screen set parallel to the direction of flow so that the corrugations divide the panels in horizontal and vertical direction in a multiplicity of small passages. There is no basis whatever for any contention that the claims of the patent in suit are in any respect indefinite or functional.

Conclusion.

It is, therefore, respectfully submitted that the Findings of Fact fully support the judgment of the lower court. Appellants have utterly failed to establish any defenses to the merits of this case.

Respectfully submitted,

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